Indy™ Workstation Owner's Guide

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Chapter 1

Introduction

This chapter explains where to find the information you need to set up and use your Indy workstation. It explains when to use this manual, and when to use the online documentation and help.

Introduction

Welcome to the Indy™ workstation. The *Indy Workstation Owner's Guide* is your guide to installing, troubleshooting, and repairing your Indy workstation. Specifically, it tells you how to:

- set up your Indy workstation, turn it on, and log in (Chapter 2)
- install and remove memory SIMMs (Single In-line Memory Modules) (Chapter 3)
- install and remove GIO (Graphics Input/Output) option boards such as video, network, or fast SCSI (Small Computer System Interface) controller boards (Chapter 4)
- install and remove internal and external peripherals, and serial, audio, and video devices (Chapter 5)
- install and remove optional software products (Chapter 6)
- diagnose hardware problems (Chapter 7)
- order and replace faulty parts (Chapter 8)
- create a safe and comfortable environment for your Indy workstation and maintain the system correctly (Chapter 9)

Refer to this guide to set up the system, install hardware options, or find a solution when you suspect there is a hardware problem. Basic information on installing software is also included. For more advanced information on installing software and troubleshooting, refer to the online *Software Installation Administrator's Guide*.

The system and all the procedures in this guide are designed so that you may maintain and repair the system without the help of a trained technician. However, do not feel that you *must* work with the hardware yourself. You can always contact your maintenance provider to have an authorized service provider work with the hardware instead.

Finding the Information You Need

The Indy workstation ships with the following sources of information, as shown in Figure 1-1:

- *Indy Workstation Owner's Guide* and pictorial setup poster
- online System Tour
- *IRIS InSight*™ online documentation and help (includes a catalog of all documentation)
- *IRIX*™ *Release Notes* (on the CD)

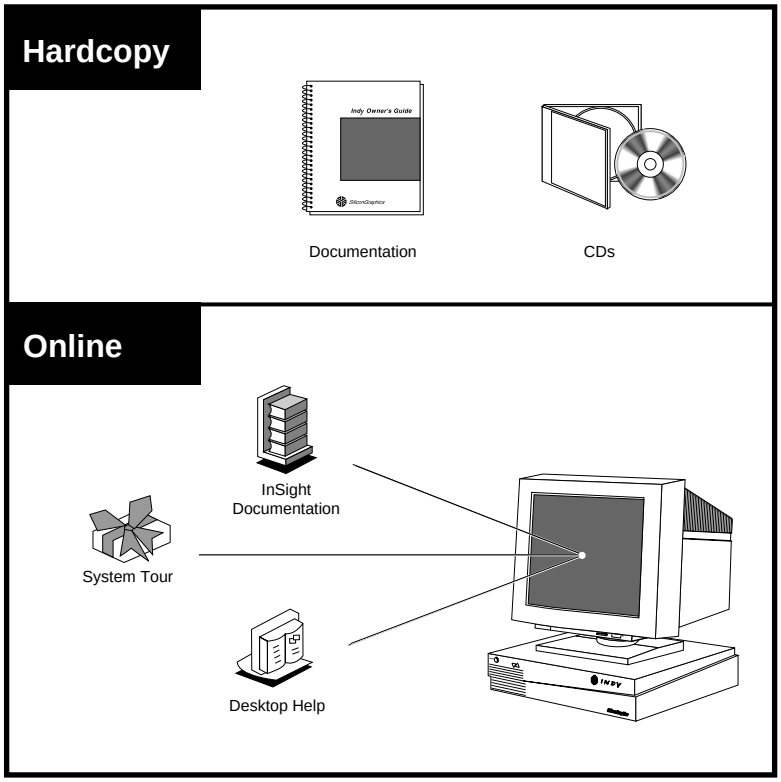

Figure 1-1 Sources of Information for the Indy Workstation

The following sections contain information on options that can help you get your workstation up and running and help you become productive as soon as possible.

Indy Workstation Owner's Guide

Refer to the *Indy Workstation Owner's Guide* (this manual) to set up the system and install hardware options, or find solutions when you suspect there is a hardware problem. In addition, it contains basic information on installing or removing optional software using the installation tool, *Inst*. For information on using the Software Manager to install software, see Chapter 4 of the online *Personal System Administration Guide*. For advanced information on software installation and troubleshooting, refer to the online *Software Installation Administrator's Guide*.

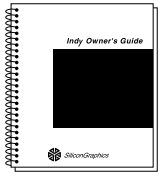

Figure 1-2 Indy Workstation Owner's Guide

IRIS InSight Online Documentation and Help

The online documentation package is called IRIS InSight. The InSight icon is shown in Figure 1-3. To view the manuals, from the Help toolchest, choose "Online Books." You see bookshelves for end-user, developer, and administration manuals that ship online with the system. Double-click on a book to open it.

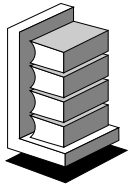

Figure 1-3 IRIS InSight Icon

For a description of the manuals and a listing of manuals that are available to purchase in hard copy, double-click on the *Documentation Catalog*.

System Tour

The online System Tour introduces you to the features and functionality of Silicon Graphics, Inc.'s Indigo Magic User Environment. This environment combines a unique desktop management system with digital media tools in one "Media User Interface" that uses audio, video, and graphics.

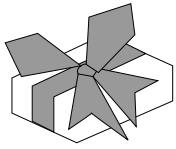

Figure 1-4 System Tour Icon

Additionally, the System Tour teaches you how to use many of the tools available in the environment. To view the System Tour, double-click the System Tour icon (shown in Figure 1-4) on the desktop.

Conventions Used in This Manual

This *Indy Workstation Owner's Guide* uses these conventions:

- References to documents are in *italics*.
- References to other chapters and sections within this guide are in quotation marks.
- Names of onscreen buttons are in *italics*.
- Names of menu choices are in quotation marks.
- Numbered sentences are steps that you follow to complete a task. Below a step, sentences preceded by a box describe in detail how to do the step. For example:

1. Connect the Ethernet AUI cable to the Ethernet AUI port on the back of the Indy workstation.

- Make sure the sliding bracket on the Ethernet port on the system is pushed all the way left.
- Plug the cable into the port.

Where to Go from Here

To set up the Indy workstation, use the poster you received with the system, and then see Chapter 2, "Getting Started." This chapter tells you how to put all the pieces together, turn the system on, and set up your login account and network connection software.

To install extra SIMMs, see Chapter 3, "Installing Memory."

To install GIO option boards, see Chapter 4, "Installing GIO Option Boards."

To install peripherals, see Chapter 5, "Installing Peripherals: Internal and External Devices." This chapter tells you how to install internal and external drives, serial devices, and audio peripherals.

To install or remove Silicon Graphics software, see Chapter 6, "Installing and Removing Software."

If you have a problem while powering on or using your Indy workstation, see Chapter 7, "Troubleshooting."

To order and replace parts, see Chapter 8, "Ordering, Removing, and Installing Replacement Parts."

For information on maintenance and some tips on making your work environment comfortable, see Chapter 9, "Safety, Maintenance, and Regulatory Information."

In addition to this manual, the Indy workstation ships with an online documentation package called IRIS Insight. To open IRIS InSight, choose "Online Books" from the Help toolchest.

Chapter 2

Getting Started

This chapter explains how to connect the parts of your Indy workstation, how to turn the system on, log in, and set yourself up on a network. It also explains how to use your IndyCam camera and the Indigo Magic User Environment.

Getting Started

This chapter tells you how to complete the setup of your Indy workstation after using the poster for basic setup instructions. It includes instructions on:

- checking your shipment
- putting the pieces together
- connecting network cables
- turning on your system
- logging in and setting yourself up on a network
- using the Indigo Magic User Environment software
- using the IndyCam™ color digital video camera
- turning off your system
- removing, replacing, and locking the top cover

Checking Your Shipment

The Indy workstation is shipped with the pieces shown in Figure 2-1. If you ordered extra memory or internal drives, they will be in separate boxes.

After you unpack your Indy workstation and its parts, make sure you have all the parts shown in Figure 2-1.

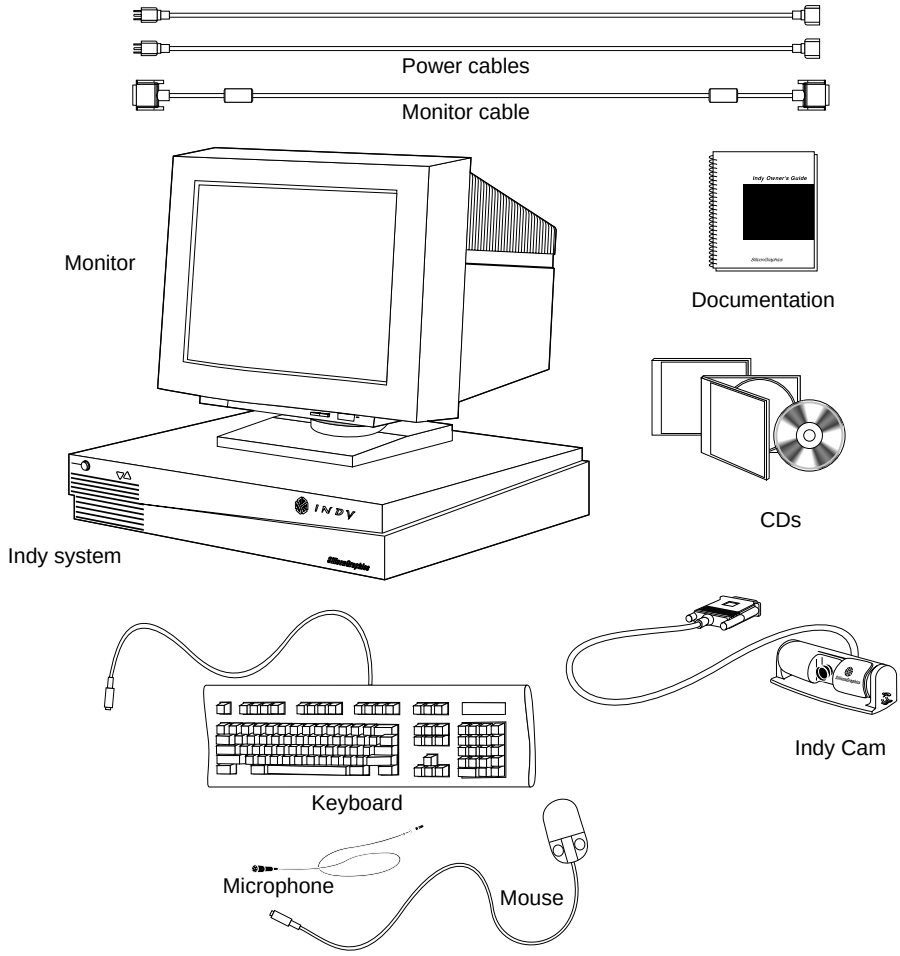

Figure 2-1 Indy Parts

Putting the Pieces Together

A fold-out poster ships in the box that contains the Indy chassis. This poster has pictorial instructions on how to unpack and set up the system. Use the poster to set up the system and to connect the following cables:

- video cable to the monitor and to the workstation
- power cable to the monitor and to the electrical outlet (a wall outlet or a power strip)
- mouse, keyboard, and microphone cables to the workstation
- IndyCam color digital video camera to the workstation
- microphone to the IndyCam camera
- power cable to the workstation and to the electrical outlet (a wall outlet or a power strip)

Note: The power supply for the Indy workstation is auto-selecting. With the appropriate power cable or adapter for your country, you can plug Indy into almost any power source (47–63 Hz, 100–132 VAC 2.4–1.8A, or 200–264 VAC 1.2–0.9A).

Safety Considerations

- Place the Indy workstation on a flat, hard surface. A soft surface such as a carpet interferes with the airflow through the bottom of the chassis and may cause overheating.
- The device for disconnecting power to this system is the power cable. To ensure the safety of the workstation, the electrical outlet must be close to the workstation and easily accessible.

If your site has multiple Indy workstations, it's a good idea to save at least one set of packing materials in the event that you need to return a system for upgrading or for service.

About the CD Software Media

You received one or more compact discs (CDs) with your Indy workstation. The CDs include optional software that you might find useful, and a copy of the operating system and software installation tools that are already on your system disk. You don't need the compact discs to set up and use your system. Store the CDs in a safe and convenient place so you can find them if you need to install new software, or if the system fails.

For more information on installing software, refer to Chapter 6, "Installing and Removing Software."

Connecting the Network Cable

The Indy workstation supports two types of Ethernet on the main system, only one of which may be connected.

- Ethernet AUI (Access Unit Interface)
- Ethernet 10-BASE T

It also supports the Integrated Services Digital Network (ISDN).

For information on which type of network to use, see your network administrator.

- To connect an Ethernet AUI cable, turn to "Connecting an Ethernet AUI Cable" on page 15.
- To connect an Ethernet 10-BASE T cable, turn to "Connecting an Ethernet 10-BASE T Cable" on page 17.
- To connect an ISDN cable, turn to "Connecting an Integrated Services Digital Network (ISDN) Cable" on page 18.

Connecting an Ethernet AUI Cable

To connect an Ethernet AUI cable to your system, follow these steps:

1. From your network administrator, obtain a drop cable that is long enough to reach the back of your Indy workstation.
2. Connect the Ethernet AUI cable to the Ethernet AUI port on the back of the Indy workstation, as shown in Figure 2-2.

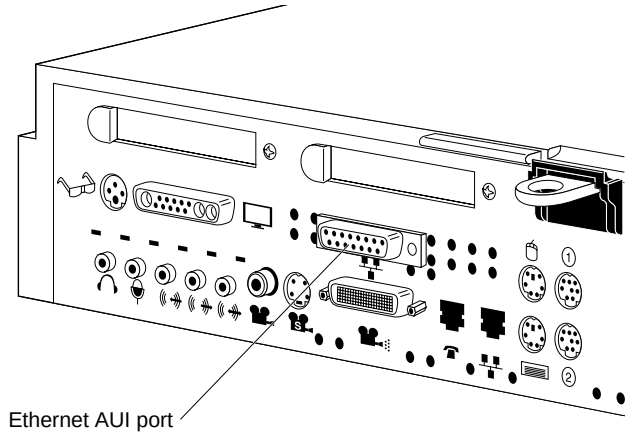

Figure 2-2 Connecting an Ethernet AUI Cable to the Indy Workstation

- Make sure the sliding bracket on the Ethernet port on the system is pushed all the way left, as shown in Figure 2-3.
- Plug the cable into the port.
- Slide the bracket right to hold it in place.

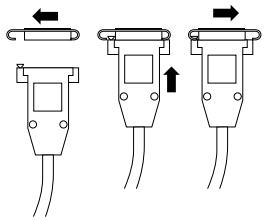

Figure 2-3 Ethernet AUI Cable

Note: If you connect an Ethernet AUI cable and an Ethernet 10-BASE T cable to your system, and if the Ethernet 10-BASE T connection is "live," the system uses Ethernet 10-BASE T.

You are finished installing the Ethernet AUI cable. If you do not have other network cables to install, turn to "About the Controls on the Front Panel" on page 19 to power on the workstation.

Connecting an Ethernet 10-BASE T Cable

To connect an Ethernet 10-BASE T cable to your system, follow these steps:

1. From your network administrator, obtain a 10-BASE T cable that reaches the back of your Indy workstation.
2. Plug one end of the cable into the port above the Ethernet icon on the back of the Indy workstation, as shown in Figure 2-4.

   The Ethernet 10-BASE T and the ISDN port beside it look similar. The Ethernet 10-BASE T port is the one on the right, as shown below.

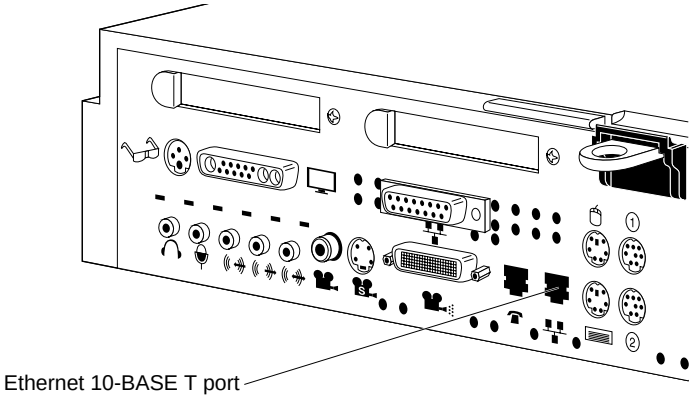

Figure 2-4 Connecting an Ethernet 10-BASE T Cable to the Indy Workstation

Note: If you connect an Ethernet AUI cable and an Ethernet 10-BASE T cable to your system, and if the Ethernet 10-BASE T connection is "live," the system uses Ethernet 10-BASE T.

You are finished installing the Ethernet 10-BASE T cable. If you do not have other network cables to install, turn to "About the Controls on the Front Panel" on page 19 to power on the workstation.

Connecting an Integrated Services Digital Network (ISDN) Cable

Before setting up your Indy so it can communicate across an ISDN connection, you need to order special services and ISDN hardware from your local telephone company.

On a new Indy, the ISDN port (see Figure 2-5) is covered with a red sticker which you should remove before connecting the hardware. For instructions on installing the hardware, refer to the online *ISDN User's Guide*, included with the ISDN software. See "Installing ISDN Software" below.

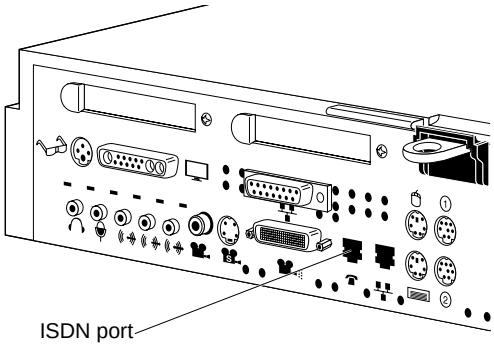

Figure 2-5 Connecting an ISDN Cable to the Indy Workstation

Installing ISDN Software

Make sure the ISDN software is installed on your system by following these steps:

1. Choose "Software Manager" from the System toolchest.
2. In the Software Manager window, click the *Manage Installed Software* button. After several seconds or minutes, a detailed list appears in the *Software Inventory* pane of the window.

3. Use the scroll bar in the Software Inventory pane to find the product named ISDN Execution Environment.
   - If you do not find this product, you need to install it from your set of IRIX CDs.
   - If you find the product, choose "Online Books" from the Help toolchest, and double click the *ISDN User's Guide*.

About the Controls on the Front Panel

Before turning on the workstation, you may want to familiarize yourself with the controls on the front panel of the Indy workstation, as shown in Figure 2-6.

- The **Power** button turns your workstation on and off.
- The **Reset** button (recessed) resets the hardware. Press it only if your system is malfunctioning and you cannot communicate with it. Use the tip of a pencil or an unwound paper clip to reach it. For more information, see Chapter 7, "Troubleshooting."
- The **Volume** buttons control the audio output. The volume down button decreases the volume; the volume up button increases it. Pressing both buttons simultaneously turns off the audio; pressing either button to turn it on.

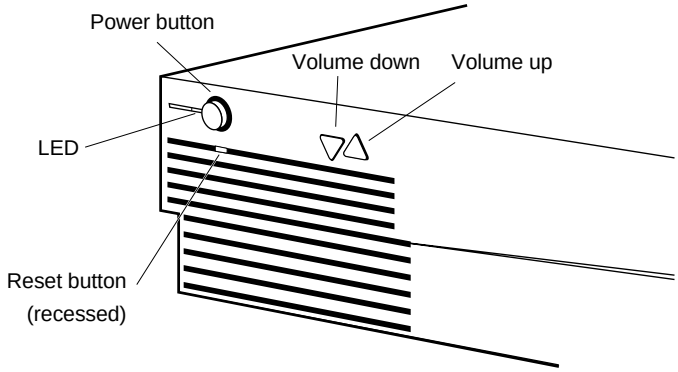

Figure 2-6 The Indy Workstation Control Buttons on the Front Panel

Turning On the Workstation

Once you've connected all of the pieces as described in the last section, follow these steps to power on and log in to the workstation:

1. Turn on the monitor.

   The monitor's power switch is on the front of the monitor. Depending on your model, it may be in either the lower right or the lower left corner. The monitor's power indicator light (called an LED) lights up when you turn on the monitor.

2. Turn on the system power.

   Press and release the power button to turn on the system, as shown in Figure 2-7.

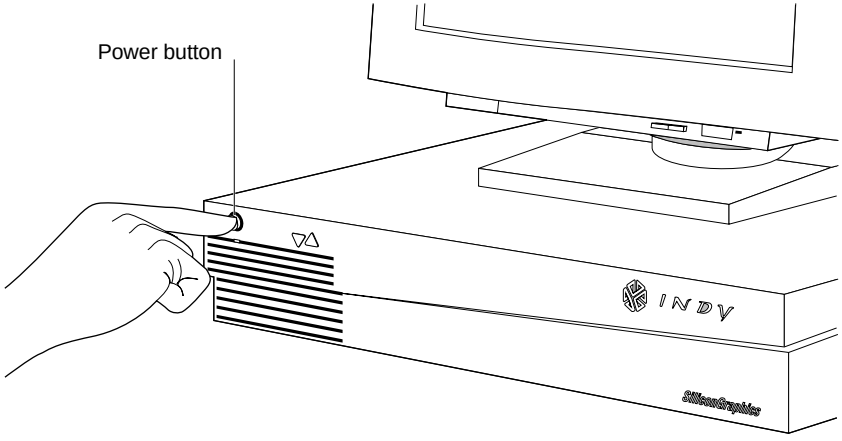

Figure 2-7 Turning on the Indy Workstation

When you power on your system, the power indicator LED on the front of the machine is amber for a few seconds, and then the LED turns to green and you hear the boot "tune."

The LED is amber while the system runs the power-on diagnostics and you see the notifier shown in Figure 2-8.

Figure 2-8 Running the Power-on Diagnostics Notifier

If the system passes all of the diagnostics tests, the light turns to green, the system continues booting, and you see the startup notifier shown in Figure 2-9.

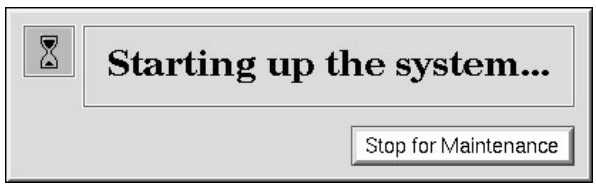

Figure 2-9 System Startup Notifier

After a few seconds, you see the notifier shown in Figure 2-10.

Figure 2-10 System is Coming Up Notifier

If you do not hear the boot tune or the LED is red and does not turn green, there may be a problem. Go to Chapter 7, “Troubleshooting.”to run some tests.

The system now boots the operating system.

If this is the first time you are booting the system, double-click on the “eye,” and you’ll be taken through the Out of Box experience. At the end of the video, you are asked if you want to keep the video on the system disk. The video uses over 120 MB of disk space. If

you choose to delete it, you can always install it again later from the CDs you received with the workstation. You then see the login screen.

If this is not the first time you are booting the system, you see the login screen. Go to the next section, "Logging In to the Workstation" on page 23.

Note: The default keyboard language is U.S. English. Since the Indy system uses a PS/2® compatible keyboard that does not automatically identify the varied international keyboard languages that Silicon Graphics offers, you need to set the nationality manually if you want to change the keyboard language. See Appendix D, "International Keyboard Support."

Logging In to the Workstation

Welcome to your new system. Once you create a user login account for yourself and set up networking software, your system has the basic information it needs to create a personal work area for you and to let you communicate with other systems and people on your network.

After the system boots, you see the login screen, as shown in Figure 2-11.

Figure 2-11 The Login Screen

The login screen has an *EZsetup* icon, an *OutOfBox* icon, and other icons representing each user who has a login account on the workstation.

If you already have a login account, double-click the icon that's labeled with your login name. If you do not have a login account, double-click the E*Zsetup* icon and go to the next section, "Creating Your Login Account and Network Connection."

Creating Your Login Account and Network Connection

After double-clicking the *EZsetup* icon, you see the EZsetup screen shown in Figure 2-12.

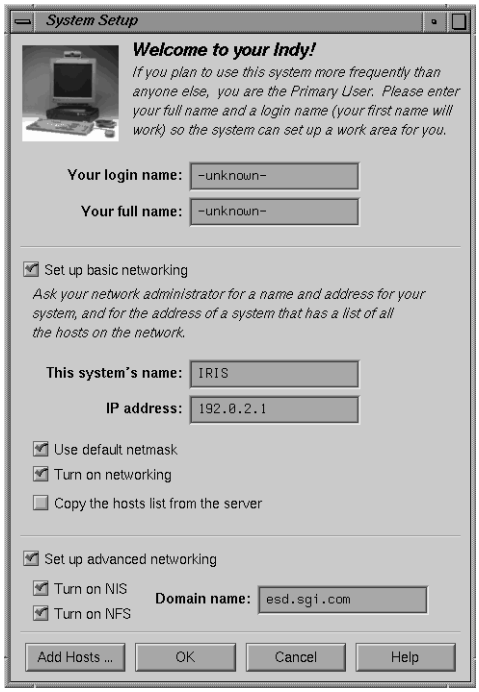
System Setup
Welcome to your Indy!
If you plan to use this system more frequently than anyone else, you are the Primary User. Please enter your full name and a login name (your first name will work) so the system can set up a work area for you.
Your login name:
-unknown-
Your full name:
-unknown-
Set up basic networking
Ask your network administrator for a name and address for your system, and for the address of a system that has a list of all the hosts on the network.
This system's name:
IRIS
IP address:
192.0.2.1
Use default netmask
Turn on networking
Copy the hosts list from the server
Set up advanced networking
Turn on NIS
Turn on NFS
Domain name:
esd.sgi.com
Add Hosts ...
OK
Cancel
Help

Figure 2-12 The EZsetup Screen

Setting up your login account through EZsetup gives you administrative (root) privileges.

- If you plan to connect to an existing network, contact your network administrator for a login name for yourself, a hostname and IP address for your system, and the IP address of another system on the network that has a master list of all systems on the network. Then go to Step 1 below.
- If you don't have the network information, you can complete the *login name* and *full name* fields, and click the *OK* button to set up your login account. Your network administrator can set up your network connection later. Or you can set it up yourself by choosing "System Manager" from the System toolchest and double-clicking the *Network Setup* icon.

For more information on setting yourself up on a network, log in and select "Online Books" from the Help toolchest. Then select the *Personal System Administration Guide* and look in Chapter 3, "Setting up Network, Peripheral, and Printer Connections."

Follow the steps below to set up your login account and network connection.

Note: If you change your mind at any time while entering the information, click the *Cancel* button. The system makes no changes, logs you out of the EZsetup account, and shows the login screen again.

1. Type your login name (usually a shorter version of your name; for example, your first name or initials) in the field labeled *Your login name*.
2. Type your full name in the field labeled *Your full name*.
3. If your system is already physically connected to a network, and you have the necessary network information from your network administrator, go on to step 4.

   If your system is *not* connected to a network, skip to step 5.
4. Move the cursor over the box next to *Set up basic networking*, and click the mouse button. Enter the network information that your network administrator provided.
   - Type the hostname in the field labeled *This system's name*.
   - Type the IP address in the IP address field. Make sure it consists of two to four numbers, separated by periods, such as 192.0.2.2
   - The box next to *Use default netmask* is checked by default.
     Do not remove the check mark unless your network administrator wants to specify a custom netmask.
   - Click the box next to *Turn on networking*. The system will not turn on the networking software until you click *OK*.
   - In the field labeled *Copy the host list from the server*, type the IP address of a system on the network that contains a master list of all other systems on the network.

5. When all the information is correct, click the OK button.

   The system sets up the software, logs you out of the EZsetup account, and shows the login screen displaying people who have accounts on the system.

6. When you see the login screen, log in to your new account by double-clicking the icon that's labeled with your login name.

Now that you have a login account, go to the next section to learn about the desktop management system called the Indigo Magic User Environment.

Using the Indigo Magic User Environment

Once you're logged in, you are in the Indigo Magic User Environment. Before learning about the environment, however, you may be interested in learning a few tips and shortcuts for using the mouse.

Mouse Techniques and Shortcuts

To get started, you need to know a few basic techniques for using the mouse and working with icons.

- To *select an icon*, place the cursor over the icon and then click the left mouse button. Icons turn yellow when they are selected.
- To *select several icons*, press the **<Shift>** key while selecting the icons, or press the left mouse button in the background and drag the mouse. A box is created as you drag the mouse. All icons touched by the box you create are selected.
- To *open an icon*, place the cursor over the icon and then double-click the left mouse button. When you open an application icon, you run the application; when you open a folder icon, you open a window that shows the contents of that directory.
- To *drag and drop* icons, place the cursor on an icon, press the left mouse button, and move the mouse. Release the mouse button to drop the icon.

  This drag-and-drop technique lets you copy icons from one directory to another, and launch applications with a particular file.

- To *display a pop-up menu that contains commands from the Selected menu*, place the cursor over a window and then press the right mouse button. (Not all windows have pop-up menus.)

Now you are ready to use the desktop management system called the Indigo Magic User Environment.

Reading the following sections will give you a quick overview of the new environment and help you become productive rapidly.

System Tour

The fastest way to become familiar with the Indigo Magic User Environment is to look at the online System Tour. The tour introduces you to the features and functionality of the system and teaches you how to use many of the tools available in the environment.

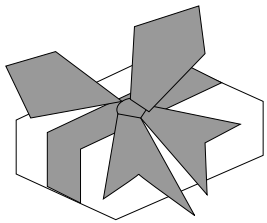

Figure 2-13 System Tour Icon

To start the System Tour, double-click the *System Tou*r icon (shown in Figure 2-13) on the desktop.

The Desktop and the Icons

When you log in, a collection of windows and icons (small pictures) appears on your screen by default. If you don't see any items on your screen, contact your system administrator to see if the desktop has been disabled.

The screen background is called the *desktop*. It's a place for you to set frequently used icons so you have quick and easy access to them. In this way, the *desktop* is similar to an actual office desk. For example, on your desk you might have a telephone, a container of pens and pencils, and a stack of folders or notebooks related to the projects on which you're currently working. Other, less frequently used items are stashed away in desk drawers. Your online *desktop* mimics this arrangement using icons.

The default *desktop* contains:

- the console window
- the toolchests
- the *desktop* and the icons that appear on it

By default, several icons (small pictures shown in Figure 2-14) appear on the *desktop*: a folder icon representing your home directory, a dumpster icon, and icons for peripherals you have installed.

Figure 2-14 Desktop Icons

The peripheral icons show the current state of the devices they represent.

For example, if you place a music CD into the compact disc player, the icon changes to display a few musical notes, as shown in Figure 2-15. When you double-click the icon, it opens CD Manager, a utility that lets you play and record from a compact disc.

Figure 2-15 CD Player Icon

Console Window

The small box (shown in Figure 2-16) next to the stack of toolchests is the console window. It looks like a small box because it has been minimized. You can open it to its full size by clicking on it with the left mouse button. Many of the error messages that the system generates appear in this window.

Figure 2-16 The Minimized Console Window

Clicking on the console brings up the IRIX shell where you can type IRIX commands. For information on IRIX commands, from the Help toolchest, choose "Online Books." Select *IRIS Essentials* and look for "Using IRIX Commands."

The Toolchests

The stack of toolchests in the top left hand corner of the screen (shown in Figure 2-17) provides a listing of most of the system functions and programs. Under the System toolchest is the System Manager, which provides hardware information about your workstation. From the Help toolchest you can access the library of online documentation and online help.

Figure 2-17 The Toolchests

To pop up a menu, move the cursor over a label on a toolchest, then press the left or right mouse button.

IRIS InSight and Online Help

The Indy workstation includes IRIS InSight, a library of online documentation and extensive online help that is available from the desktop and from most Silicon Graphics applications. The IRIS InSight icon is shown in Figure 2-18. From the desktop, you access the online help and documentation from the Help toolchest as follows:

- From the Help toolchest, choose "Online Books" and the IRIS InSight Document Library appears. Once the IRIS InSight Document Library is open, you can open a manual and read it, or you can type in a word or phrase and quickly find the information you need. See the IRIS InSight online help for instructions.
- From the Help toolchest, choose "Desktop Help." A listing of system-level help appears. Additionally, each application provides a Help button or Help menu so that you can get help on a particular application.

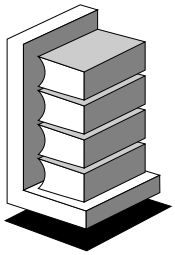

Figure 2-18 IRIS InSight Icon

Using the IndyCamera

Follow these instructions to get started with your IndyCam color digital video camera and to adjust the color of the image, if necessary.

If you followed the steps on the pictorial poster you received with the workstation, skip to step 3.

1. Connect the camera cable to the port above the digital video icon on the rear of the workstation.

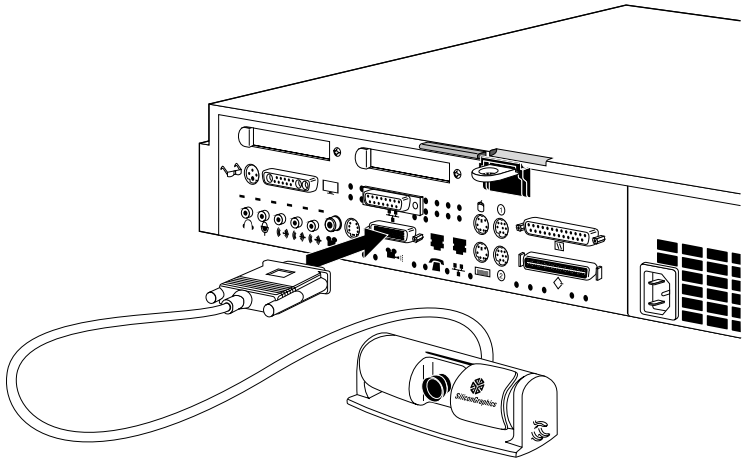

Figure 2-19 Connecting the IndyCam Camera Cable to the Workstation

2. Place the camera on top of the monitor. If you wish, you can attach the microphone to the side of the camera.
3. Slide the plastic lens cover on the camera aside to expose the lens, as shown in Figure 2-20.

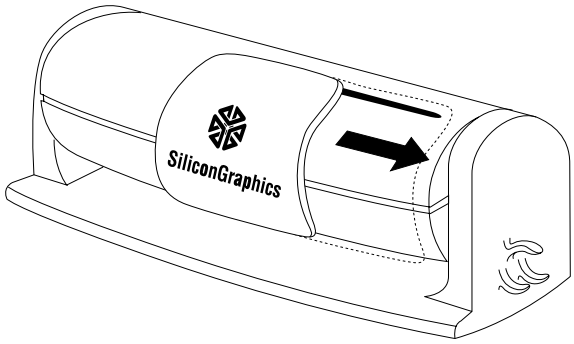

Figure 2-20 Sliding the IndyCam Lens Cover Aside

4. Remove the small round lens cap covering the lens.
5. On the default screen, double-click the *camera* icon, shown in Figure 2-21, to get to the video capture tool.

Figure 2-21 Camera Icon

If the lens is pointed at you, you see your image in a window on the screen. If the image is out of focus, twist the lens in either direction to focus it.

Recording to a File

For information on recording to a file from the IndyCam camera, select "Online Books" from the Help toolchest, choose *Media Tools User's Guide*, and look for "The Capture Tool."

Adjusting the Color or the Image

The color of the image is affected by the ambient light. If the image color isn't quite right, you can adjust it as follows:

1. Click on the Tools menu of the video Capture tool and choose "Video Panel."
2. Click on the *White Balance* button on the panel that appears. The color of the image changes. Or try holding a letter-size piece of paper about 6 to 12 inches in front of the lens and then click the *White Balance* button.

Turning Off Your Indy Workstation

There are two ways to shut down and power off your Indy system:

- use the power button to shut down the system software and power off
- use the Toolchest menu to shut down the system software and return to the System Maintenance menu or power off

Using the Power Button to Shut Down the System

To shut down the system, press and release the power button on the front of the workstation, as shown in Figure 2-22, to power off the system.

Note that it's not necessary to shut down the system software before pressing the power button.

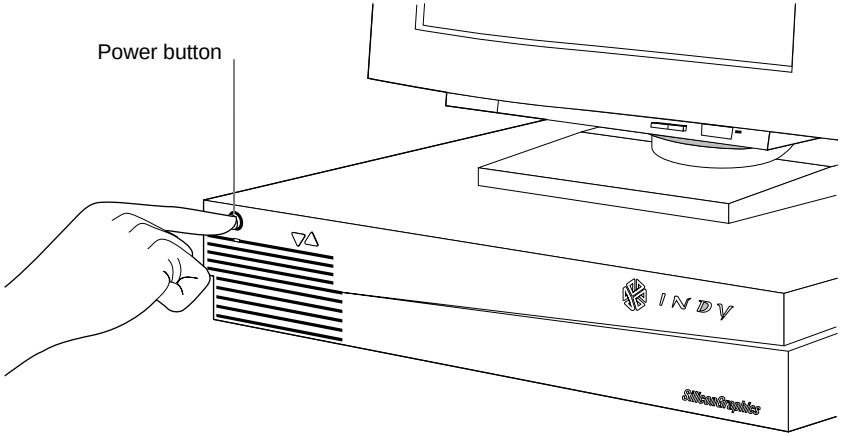

Figure 2-22 Turning Off the Indy Workstation

The notifier shown in Figure 2-23 appears on your screen within a few seconds and the LED blinks green and amber. The system powers off automatically within the next minute.

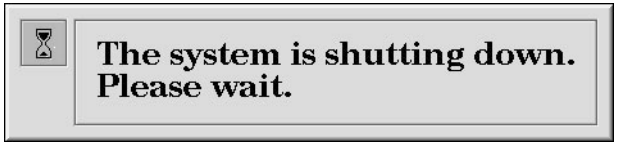

Figure 2-23 System Power Off Notifier

Using the Toolchest to Shut Down the System

You can use the System menu in the Toolchest to shut down the system. You can also choose to power off the system. To do this, follow these steps:

1. Choose “System Shutdown” from the System menu in the Toolchest.
   - Place the cursor over the word “System” in the Toolchests and click the left or right mouse button. The toolchests are shown in Figure 2-24.
   - Place the cursor over the words “System Shutdown” and click the mouse button.

Figure 2-24 The Toolchests

After a few seconds you see the message shown in Figure 2-25.

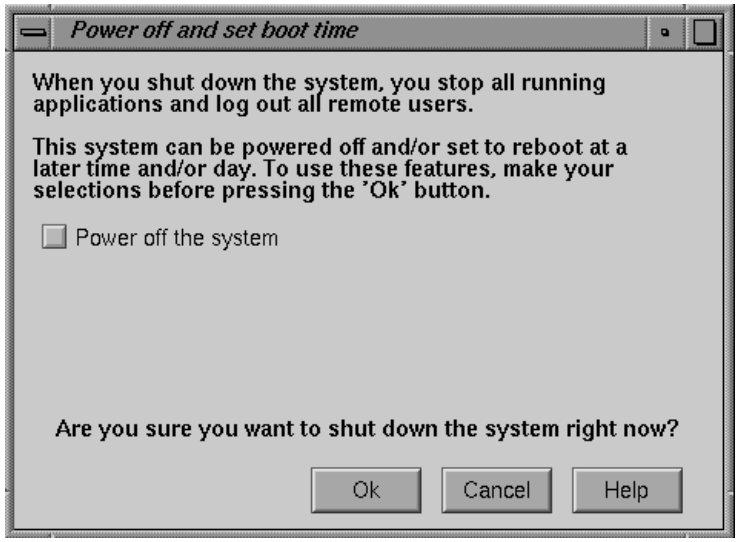
Power off and set boot time
When you shut down the system, you stop all running applications and log out all remote users.
This system can be powered off and/or set to reboot at a later time and/or day. To use these features, make your selections before pressing the 'Ok' button.
Power off the system
Are you sure you want to shut down the system right now?
Ok
Cancel
Help

Figure 2-25 System Shutdown Caution Message

2. Click the OK button.
   Then you see the message shown in Figure 2-26.

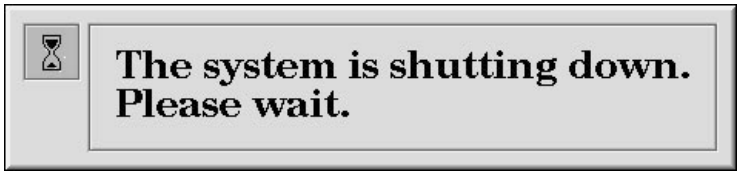

Figure 2-26 System Shutdown Notifier

Next you see the message shown in Figure 2-27.

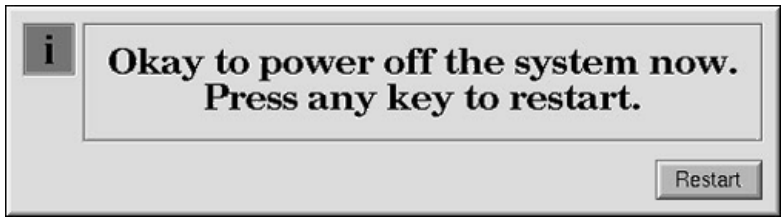

Figure 2-27 Okay to Power Off Notifier

3. Click the *Restart* button to shut down and restart the system without powering off. Or, if you wish to power off the system, press and release the power button on the front of the Indy workstation.

Removing the Top Cover

Follow these steps to remove the top cover of your Indy workstation:

1. If the system is powered on, press and release the power button on the front of the system to shut down the software and power off the system.
2. Disconnect the power cable from the back of the Indy workstation.
3. Facing the front of the Indy workstation, place your right thumb on the small lip at the back of the cover, and your second and third fingers under the finger ledge, as shown in Figure 2-28.
4. Snap the cover loose by bracing your thumb against the lip and pushing up the finger ledge with the second and third fingers, followed by a firm push toward the front of the system.

Hint: It may be difficult to release the cover the first time, and you may have to use some force.

5. Slide the cover forward about one inch and remove it.

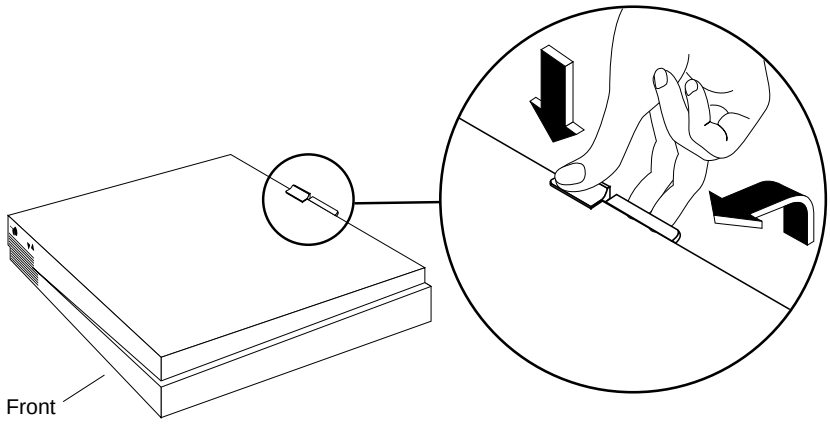

Figure 2-28 Removing the Top Cover From the Indy Workstation

Installing Additional Memory, Boards, Internal and External Peripherals

To install additional options, go to the appropriate chapter as shown below for installation instructions and then return to this chapter to complete setting up your workstation.

- To install additional memory, go to Chapter 3, “Installing Memory.”
- To install a GIO option board such as a video, network, or fast SCSI controller board, go to Chapter 4, “Installing GIO Option Boards.”
- To install an optional internal drive (floptical, or second hard disk drive), or external SCSI devices, go to Chapter 5, “Installing Peripherals: Internal and External Devices.”

Replacing the Top Cover

To replace the cover of your Indy workstation, follow these steps:

1. Facing the front of the system, lower the cover about a few inches from its fully closed position, as shown in Figure 2-29.
2. Tilt the cover and insert the tab through the hole in the rear of the chassis.
3. Lower the cover and slide it toward the back of the chassis until it snaps into place.

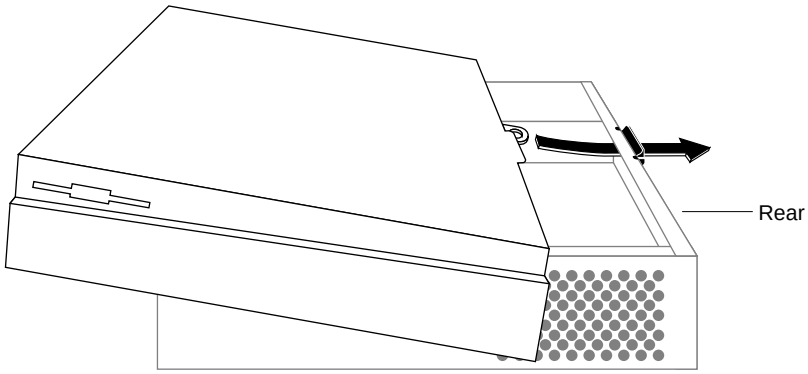

Figure 2-29 Replacing the Top Cover on the Indy Workstation

Locking the Top Cover

To prevent anyone from tampering with the internal parts of the Indy workstation, attach a lock through the hole in the lockbar, as shown in Figure 2-30. To prevent theft of the workstation, attach a cable lock.

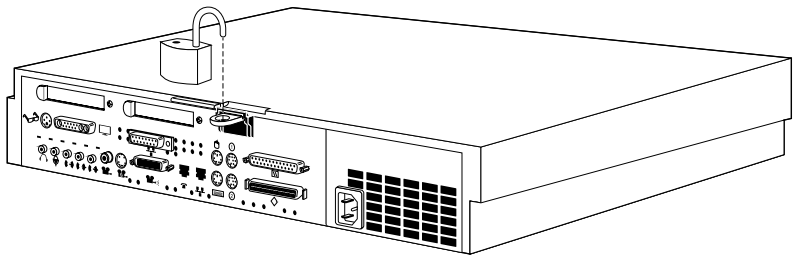

Figure 2-30 Attaching a Lock to the Indy Workstation

Chapter 3

Installing Memory

This chapter describes how to install SIMMs (Single Inline Memory Modules) in your Indy workstation.

Installing Memory

This chapter tells you how to install single in-line memory modules (SIMMs). If you are removing and replacing SIMMs, go to "Replacing SIMMs" on page 155.

Installing SIMMs

Follow these steps to shut down your system, remove the cover, install the SIMMs, replace the cover, and check to make sure the SIMMs are installed and working properly.

1. If the system is powered on, press and release the power button on the front panel to power off the system.

   The system powers off automatically after about a minute.

2. Disconnect the power cable from the back of the Indy workstation.
3. Remove the top cover by releasing the latch on the rear of the cover and sliding it forward. For more details, see "Removing the Top Cover" on page 36.
4. Ground yourself to a metal part of the chassis by attaching the wrist strap.
   - Unwrap the first two folds of the band and wrap the exposed adhesive side firmly around your wrist.
   - Unroll the rest of the band and peel the liner from the copper foil at the opposite end.
   - Attach the copper foil to a metal part of the Indy chassis.

   Caution: The system's internal components are sensitive to static electricity. Handle the parts carefully, and wear the wrist strap to avoid discharging static electricity.

5. Move the system or position yourself so that you are facing the power supply. The SIMM sockets are located as shown in Figure 3-1.

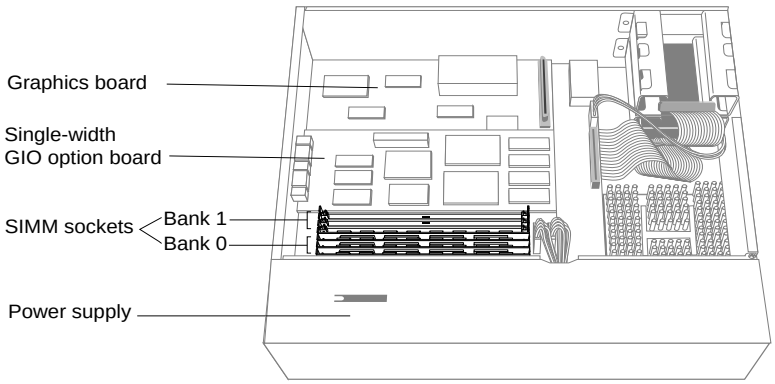

Figure 3-1 Locating the SIMM Sockets

There are eight sockets, split into two banks—0 and 1. Bank 0 is closer to the power supply and contains sockets S1 through S4. Bank 1 is closer to the graphics board, and contains sockets S5 through S8. The system ships with four SIMMs installed in Bank 0. (See Figure 3-2.)

(If you are upgrading memory or replacing faulty memory and need to remove the four installed SIMMs, go to “Replacing SIMMs” on page 155 and then return to this section.)

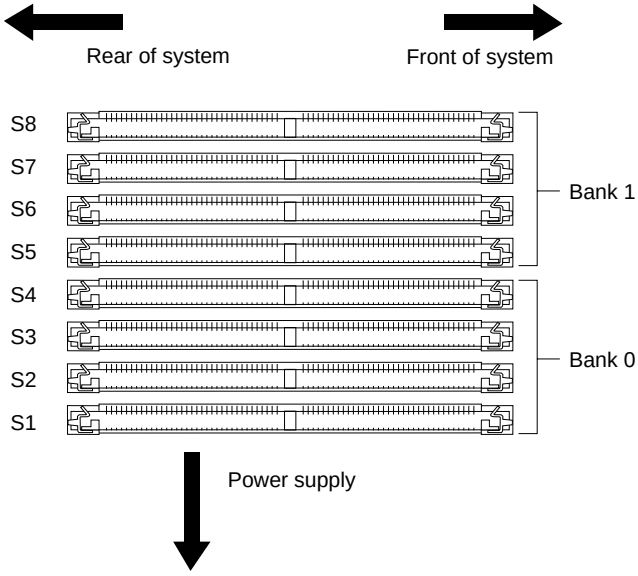

Figure 3-2 SIMM Bank and Socket Numbers

6. Install the SIMMs consecutively in groups of four, *beginning with the open slot closest to the power supply* (from bank 0 to 1). Each bank must have four SIMMs of the same capacity installed.

   For example, you may install four 4 MB SIMMs in bank 0, and four 8 MB SIMMs in bank 1, but you may not install 4 MB and 8 MB SIMMs in the same bank.

   - Using both hands, grasp the top of the SIMM so the notch in the bottom corner of the SIMM is on your right, as shown in Figure 3-3.

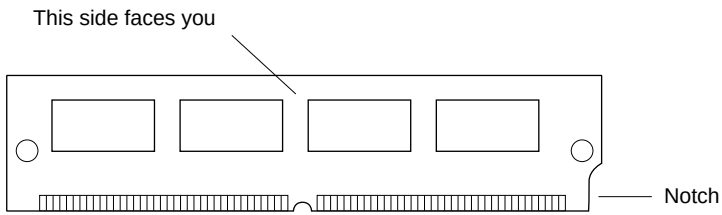

Figure 3-3 Orienting the SIMM

- *Start with the socket closest to the power supply.* Tip the top of the SIMM away from the power supply, and press the SIMM firmly into the socket at a 45-degree angle to the board.
- Tilt the SIMM up into a vertical position, as shown in Figure 3-4. There should be a slight click when the SIMM reaches the vertical position as the metal latches snap up around the SIMM.The SIMM is positioned correctly when the latches on both sides of the SIMM socket are hugging the edges of the SIMM.

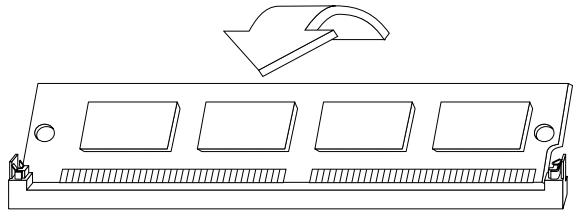

Figure 3-4 Tilting Up the SIMM to a Vertical Position

Note: Some GIO option boards, if installed on the side of the graphics board close to the SIMMs as shown in Figure 3-5, may impede your installation of the SIMM in the last socket of bank 1 (closest to the graphics board). If this is the case, you may have to remove the GIO option board to gain access to the SIMM socket. Turn to "Replacing a GIO Option Board" on page 137 for instructions and then return to this section.

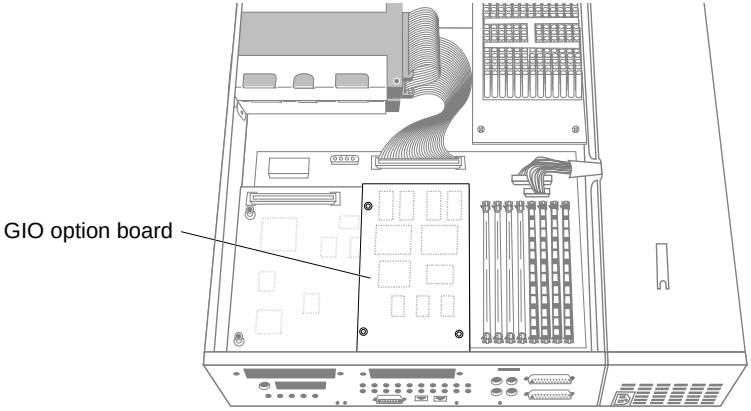

Figure 3-5 The GIO Board Installed on the Right Side of the Graphics Board

7. Install the rest of the SIMMs the same way.
8. If you removed a GIO board to gain access to the last SIMM socket, reinstall it, referring to "Installing a GIO Option Board" on page 53.

Now, go to the next section to check that the SIMMs are installed correctly before closing up the system.

Checking the SIMM Installation Visually

Before replacing the cover, make a final visual check that the SIMMs are installed correctly.

1. Check that each SIMM is vertical and perpendicular to the system board.
   - Look across the tops of the SIMMs to make sure they are even and inserted all the way into the socket.
   - If the SIMM appears to be leaning, push it up into a vertical position.
   - Make sure the latches on the sides of each SIMM fit snugly around it.
2. If you have no other internal parts to install, replace the top cover by inserting the tab through the hole in the rear of the chassis and sliding the cover back until it snaps into place. For more information, see "Replacing the Top Cover" on page 38.

   It is important to replace the cover before testing the SIMMs. This ensures proper airflow through the system while the system is running the test.
3. Reconnect the power cable to the connector on the back of the system.

You are now ready to power up the system and check if the system recognizes the new memory.

Verifying the New Memory

To confirm that you've installed the memory modules correctly, check whether the system recognizes the new memory. Follow these steps:

1. Press and release the power button to turn on the power.

   After the power-on diagnostics run, you see a notifier, as shown in Figure 3-6.

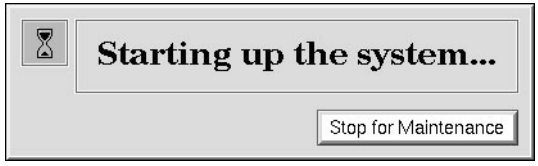

Figure 3-6 System Startup Notifier

   The system boots up and brings you to the login screen.

   If no picture appears on your screen and the LED on the front panel is blinking red, one or more SIMMs are not installed correctly. Check to make sure the SIMMs are installed correctly by referring to "Checking the SIMM Installation Visually" on page 47; then try this procedure again.

2. Log in to your account. For more information on logging in, refer to "Turning On the Workstation" on page 20.

   When you log in, the default *desk* appears. In the upper left-hand corner of the screen are the Toolchests.

3. Choose "System Manager" from the System toolchest.

   You see a window showing Hardware and the Shared Resources.

4. Look under "Hardware" for the line showing memory. The amount of memory shown in megabytes should equal the amount of memory that came with the Indy workstation plus the amount of memory you installed.

   For example, if you had 16 MB of memory when you started and you installed another 16 MB, you should have a total of 32 MB.

5. If the system does not show the total amount of memory you now have installed, the SIMMs may not be installed correctly. Go to “Installing SIMMs” on page 43 and try re-installing the SIMMs, following the instructions carefully. Then try this procedure again.

You have finished installing the SIMMs.

Chapter 4

Installing GIO Option Boards

This chapter describes how to install GIO option boards such as video, network, fast SCSI, and other I/O boards in your Indy workstation.

Installing GIO Option Boards

This chapter tells you how to install GIO (Graphics Input/Output) option boards. GIO option boards are video, network, fast SCSI controller boards, and other I/O boards that are connected to the expansion slots on the graphics board to add functionality to your system.

If a GIO option board is already installed, and you wish to replace it, go to "Replacing a GIO Option Board" on page 137.

Installing a GIO Option Board

GIO option boards are installed on top of the graphics board. A GIO option board can be either single-width, covering half of the graphics board, or double-width, extending over the entire graphics board.

Note: *Refer to the manual included with your GIO option board for special installation instructions.*

Follow these steps to turn off the system, remove the cover, install the GIO option board, and replace the cover.

1. If the system is powered on, press and release the power button on the front panel to power off the system.

   The system powers off automatically after about a minute.

2. Disconnect the power cable from the back of the Indy workstation.

3. Remove the top cover by releasing the latch on the rear of the cover and sliding it forward. For more details, see "Removing the Top Cover" on page 36.
4. Ground yourself to a metal part of the Indy chassis.
   - Unwrap the first two folds of the wrist strap and wrap the exposed adhesive side firmly around your wrist.
   - Unroll the rest of the band and peel the liner from the copper foil at the opposite end.
   - Attach the copper foil to a metal part of the Indy chassis.

   Caution: The GIO option board is extremely sensitive to static electricity; you must wear the wrist strap while installing it. The wrist strap prevents the discharge of static electricity, which could damage the board.
5. Move the system or position yourself so that you are facing the rear of the system as shown in Figure 4-1. You'll be connecting the GIO option board to the graphics board.
   - If the single-width board you're installing is a video board with more than one connector for the graphics board, you must install it on the side close to the SIMM sockets.
   - If the single-width GIO option board you're installing has only one connector for the graphics board, you may install it on either side.

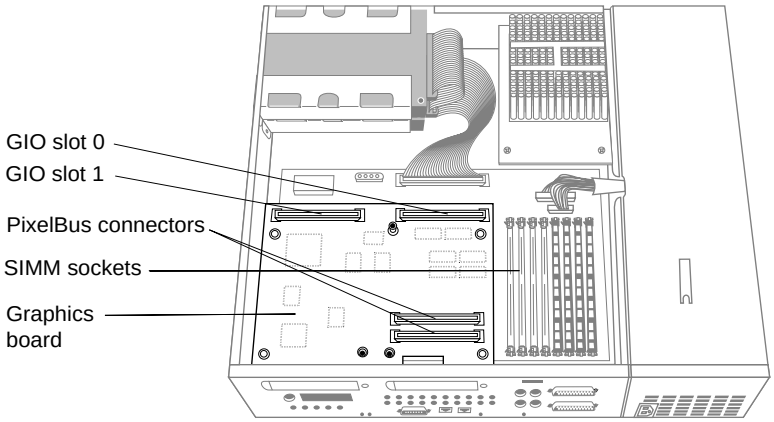

Figure 4-1 Locating the GIO Board Connectors on the Graphics Board

6. If you are installing a single-width board, use a phillips screwdriver to remove the screw from the face plate covering the GIO option port on side where you are installing the board. (See Figure 4-2.)

   If you are installing a double-width board, remove the screw from both faceplates. Save the face plates in the event you remove and do not replace the board in the future.

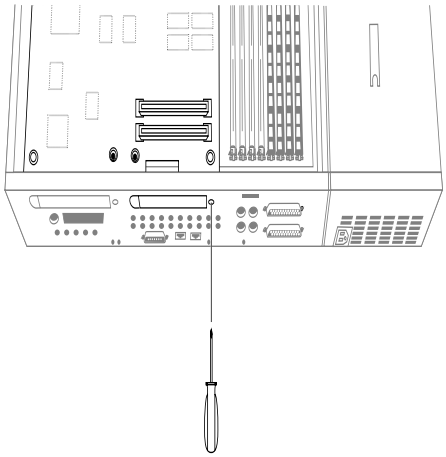

Figure 4-2 Removing the Screw from the GIO I/O Port Face Plate

7. Lower the GIO option board over the graphics board, inserting the GIO board's I/O connector through the open slot on the rear of the workstation. Figure 4-3 shows a single-width board. Figure 4-4 shows a double-width board.

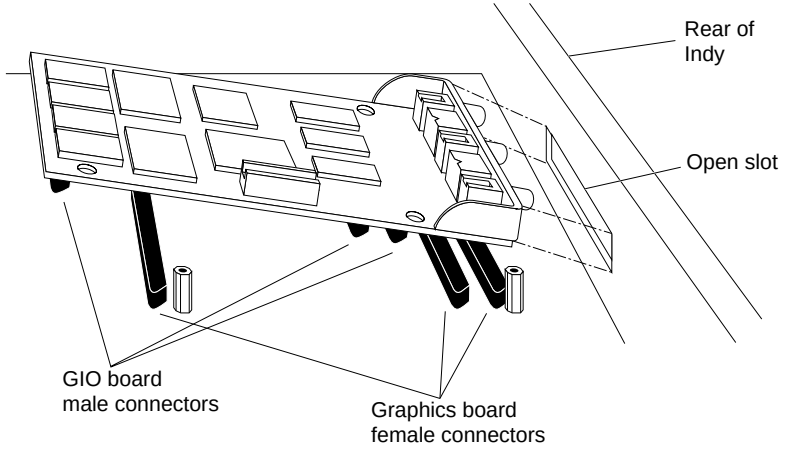

Figure 4-3 Positioning a Single-Width Board

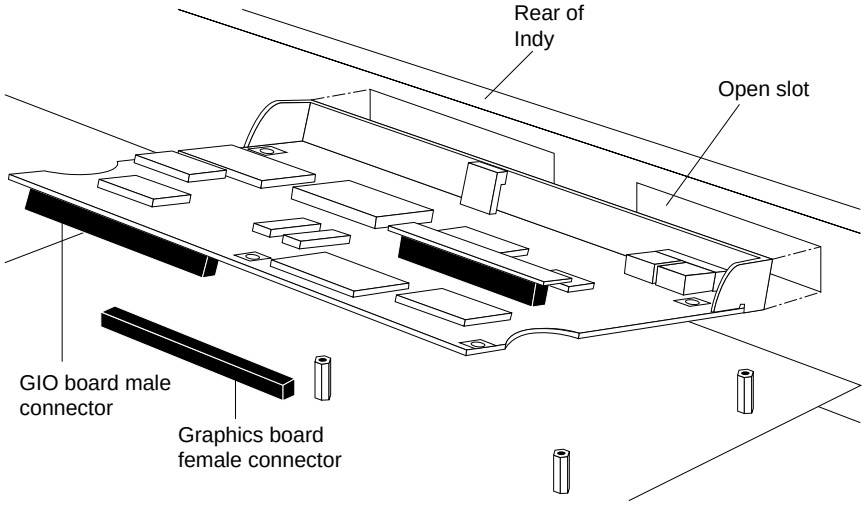

Figure 4-4 Positioning a Double-Width Board

8. Connect the GIO option board to the graphics board. Figure 4-5 shows a single-width board. Figure 4-6 shows a double-width board.
   - Align the screw holes on the GIO option board over the vacant standoffs (tall, hexagonal posts) on the graphics board.
   - Seat the connectors located under the GIO option board over the sockets on the graphics board and press down firmly on all four corners of the board until the connectors are securely seated on the graphics board.
   - Using a phillips screwdriver, insert and tighten the screws (provided with the board) in the locations shown in Figure 4-5 (single-width board) and Figure 4-6 (double-width board). As you tighten the screws, alternate among them so that the board is connected evenly.

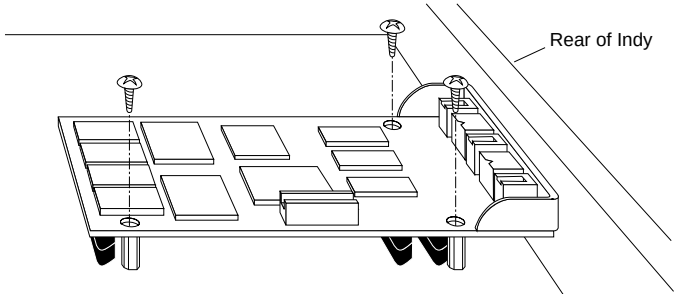

Figure 4-5 Installing a Single-Width GIO Option Board

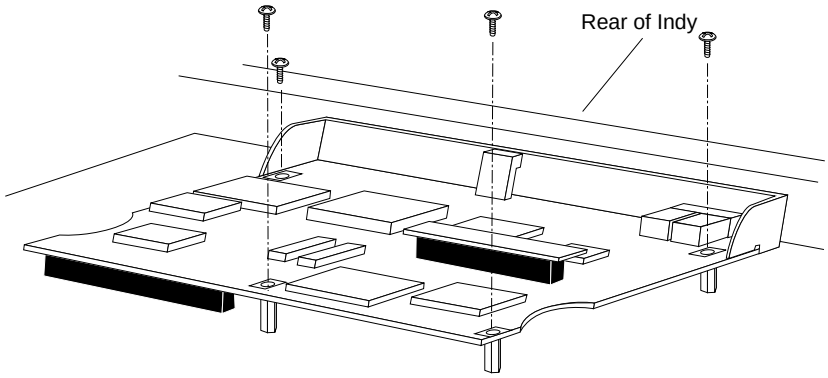

Figure 4-6 Installing a Double-Width GIO Option Board

9. Insert and tighten the screws that come with the GIO board through the rear of the workstation. Figure 4-7 shows the screw locations for a a single-width board; Figure 4-8 shows the screw locations for a double-width board.

   If the screw holes do not line up, the board may not be seated all the way, or one of the screws on the board may be screwed down too tightly.

   - Look under the board to make sure the connector or connectors are seated evenly and are inserted all the way into the sockets.
   - Press the four corners of the board to make sure the connectors are inserted all the way into the sockets on the graphics board.

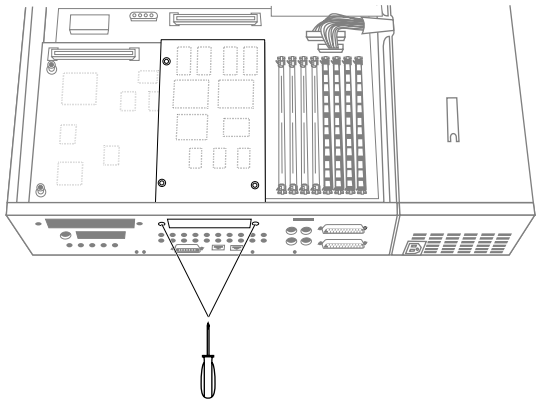

Figure 4-7 Attaching the External Screws For a Single-Width Board

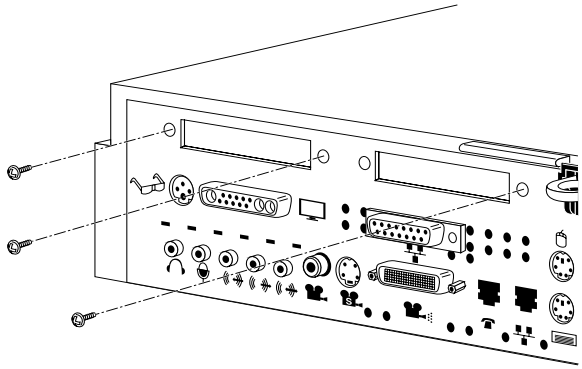

Figure 4-8 Attaching the External Screws For a Double-Width Board

10. If you have no more options to install, replace the top cover by inserting the tab through the hole in the rear of the chassis and sliding the cover back until it snaps into place. For more information, see "Replacing the Top Cover" on page 38.
11. If the GIO option board has one or more external cables, connect them to the board's I/O connector.
12. Reconnect the power cable to the connector on the back of the Indy workstation.

You are now ready to power up the system and check that the system recognizes the new board.

Checking the GIO Option Board Installation

Follow these steps to check if the system recognizes the new board:

1. Press and release the power button to turn on the power.
2. After the power-on diagnostics run, the system boots up and brings you to the login screen.
3. Log in to your account. For more information on logging in, refer to "Turning On the Workstation" on page 20.
4. Check that the board you installed is shown correctly.
   - Choose "System Manager" from the System toolchest.

     You see a window showing Hardware and Shared Resources.
   - Look under "Hardware" for a line showing the GIO board you installed.

The System Manager recognizes most boards. If the board you installed is not shown, however, you can also use the **hinv** command from a shell window. To use the **hinv** command, follow these steps:

1. From the Desktop toolchest, select "Unix Shell."
2. At the prompt, type:

   ```
   hinv
   ```

Then press **<Enter>**.

If the board you installed is still not shown, the board may not be seated correctly. Go to “Installing a GIO Option Board” on page 53 and re-install the board. Then try the above steps again.

You are now finished installing the GIO option board.

Chapter 5

Installing Peripherals: Internal and External Devices

This chapter describes how to install internal drives in your Indy workstation and how to connect external video, audio, and SCSI devices.

Installing Peripherals: Internal and External Devices

This chapter tells you how to install:

- an internal SCSI drive (floptical or second hard disk)
- external SCSI devices
- serial devices
- audio devices
- video devices

If you are replacing the system disk drive, or if you bought a diskless workstation and you now want to install a system disk, turn to "Replacing the System Drive" on page 160.

Installing an Internal Floptical Drive or Second Hard Disk Drive

This section tells you how to install a second internal drive such as a floptical or second hard disk drive in the top drive slot of the Indy workstation. The system disk drive is already installed in the bottom slot.

Installing the Drive

Use these instructions to install either a floptical or a second hard disk drive.

Follow these steps to power off the system, remove the top cover, remove the empty drive bracket (or installed drive) from the top drive slot, connect the cables, install the drive, and replace the top cover.

1. If the system is powered on, press and release the power button on the front panel to power off the system.

   The system powers off automatically after about a minute.

2. Disconnect the power cable from the back of the Indy workstation.
3. Remove the top cover by releasing the latch on the rear of the cover and sliding it forward. For more details, see "Removing the Top Cover" on page 36.
4. Ground yourself to a metal part of the Indy chassis.
   - Unwrap the first two folds of the wrist strap and wrap the exposed adhesive side firmly around your wrist.
   - Unroll the rest of the band and peel the liner from the copper foil at the opposite end.
   - Attach the copper foil to a metal part of the Indy chassis.

   Caution: Drives can be easily damaged. Handle your drive carefully. Do not drop it or otherwise abuse it.
5. Move the system or position yourself so that the power supply is close to you and the system drive and empty drive bracket are in the upper right hand corner, as shown in Figure 5-1.

   If a drive is already installed in the upper drive slot and you wish to remove it, go to "Replacing the Internal Floptical Drive or Second Hard Disk Drive" on page 158.

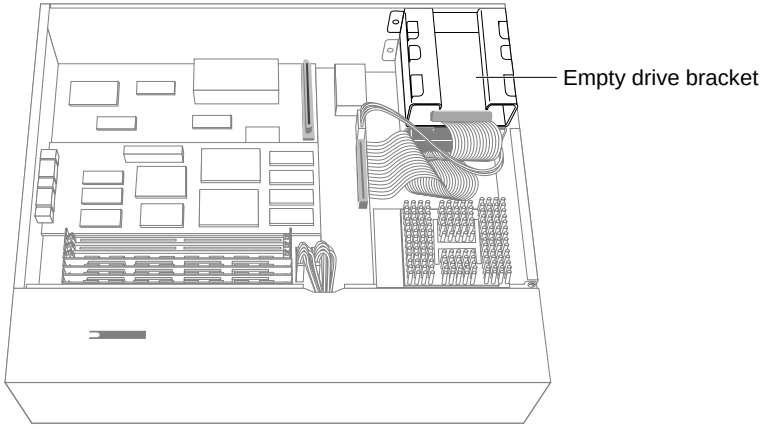

Figure 5-1 Locating the Drive Bracket Above the System Drive

6. Remove the empty drive bracket by pressing the release button that protrudes through the side of the chassis and pulling the bracket toward you, as shown in Figure 5-2.

Save the drive bracket. If you remove the drive and do not replace it, you must reinstall it.

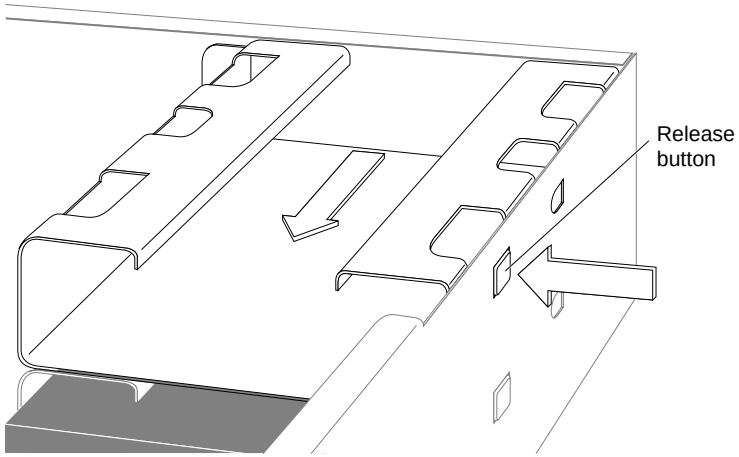

Figure 5-2 Removing the Drive Bracket

Caution: The empty drive bracket provides support for the monitor that sits on top of the system. Do not remove it unless you are installing a drive in the top slot.

7. Connect the power cable and the SCSI ribbon cable to the drive as shown in Figure 5-3. (Note that the drive is enclosed in a metal bracket. Do not remove the bracket.)
   - One end of the power cable is attached to the system board. For a floptical drive, connect the other end of the power cable to the adapter cable attached to the drive. For a second hard disk drive, connect the other end of the power cable directly to the connector on the drive.
   - Locate the SCSI connector (see Figure 5-3) on the SCSI ribbon cable. (Don't confuse it with the terminator at the end of the SCSI cable.) Press the SCSI connector firmly into the receptacle on the drive. Make sure it's pressed in firmly all the way.

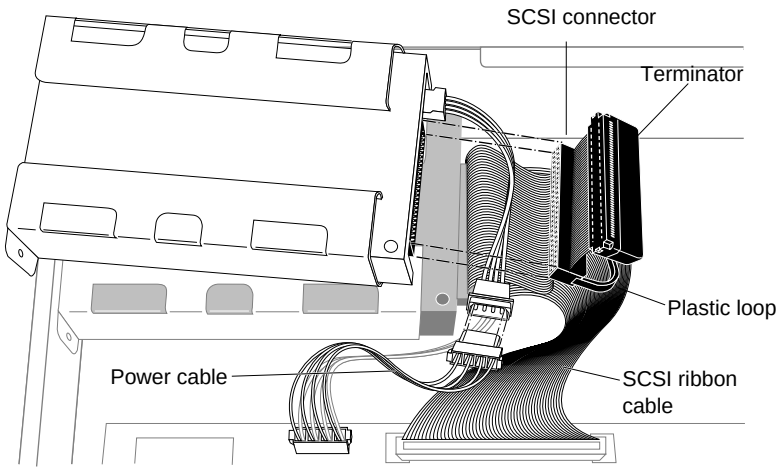

Figure 5-3 Connecting the SCSI Ribbon Cable and Power Cable to the Floptical or Second Hard Drive

8. Install the floptical or hard drive.
   - Lower the drive and bracket over the system drive, making sure it slides into the holes on the top of the system drive's bracket, and push the unit toward the rear. At the same time the button on the right side of the bracket snaps into the hole on the side of the chassis.
   - Check that the power cable is not caught between the system drive and the floptical drive.
   - If you don't hear it snap, push the bracket toward the rear until you hear the snap and can see the button protruding through the hole on the side of the chassis.

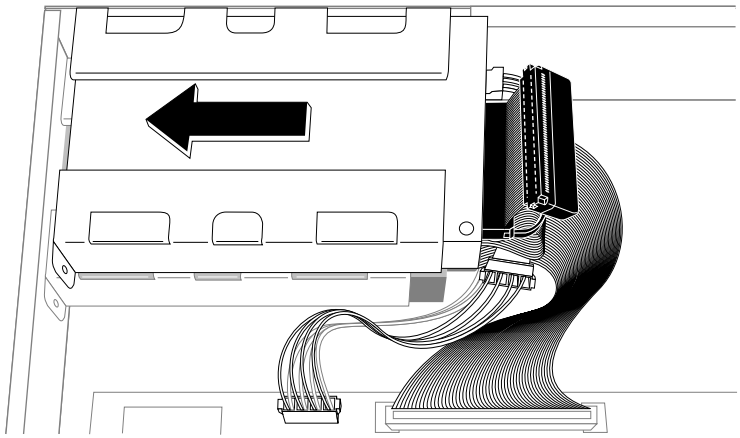

Figure 5-4 Installing the Floptical Drive Above the System Drive

9. If you have no more internal options to install, replace the top cover by inserting the tab through the hole in the rear of the chassis and sliding the cover back until it snaps into place. For more information, see "Replacing the Top Cover" on page 38.
10. Reconnect the power cable to the connector on the back of the Indy workstation.
11. Press and release the power button on the front panel to power on the system.

When you see the login screen, you are ready to log in and test the drive you installed. Go to the next section, "Testing the Internal Drive" on page 68.

Testing the Internal Drive

The system automatically sets up the system software for most internal devices you install and places an icon on the desktop.

Once you install the drive, follow these steps to check that the system recognizes the new drive.

1. Log in to your account. For more information on logging in, refer to "Logging In to the Workstation" on page 23.
2. If the device is a floptical, you should see an icon for it on the desktop. Double-click the icon to use the drive. If the device is a second hard drive, follow the instructions in the online Personal System Administration Guide, in the chapter "Setting up Network, Peripheral, and Printer Connections." (From the Help toolchest, choose Online Books.)
3. You can also use the System Manager to check that the drive is shown correctly.
   - From the System toolchest, select "System Manager."
   - You see a window showing Hardware and Shared Resources.
   - Pull down the Hardware menu and select "Disks." You see a list of installed drives.

If the drive you installed does not show up, shut down the system, remove the top cover, and go over the installation steps again to make sure you've installed the drive correctly. Also check that the cables are connected properly. Then restart the system and check the System Manager listing again. For more troubleshooting information, refer to "Internal Floptical Drive or Second Hard Disk Drive Not Working" on page 106.

Formatting a Floppy or Floptical Disk

If you are using the drive as an IRIX device, follow these steps to format a floppy or floptical disk:

1. Choose "Disk Manager" from the System toolchest. You see a photo of the drive with a labeled button underneath it.
2. Click the button beneath the photo of your floppy or floptical drive. You see the "Disk Information" window.
3. Click the "Initialize" button.

Floppy disks take about 2 minutes to format; floptical disks take about 10 minutes.

For more information on formatting disks, select "Online Books" from the Help toolchest and search for "Formatting Floppy and Floptical Disks" in the *Personal System Administration Guide*.

You are finished formatting the floppy or floptical disk.

Ejecting a Floppy or Floptical Disk

Follow these steps to eject a floppy or floptical disk from the disk drive.

1. On your desktop, make sure the *floptical* icon is selected.
2. Press the *right* mouse button, and select "Eject Floptical." Or from the Selected toolchest, choose "Eject Floptical."

Removing Drives

For instructions on removing the floptical or secondary hard drive, go to "Replacing the Internal Floptical Drive or Second Hard Disk Drive" on page 158. If you remove the floptical or secondary hard drive and do not intend to replace it, you need to inform the system that the drive is no longer there. For more information, select "Online Books" from the Help toolchest, and search for "Removing a Disk" in the *Personal System Administration Guide*.

Installing External SCSI Devices

You can connect one or more external SCSI devices to the Indy workstation. Connecting more than one device is called *daisy chaining*. Each of the devices has a unique SCSI address and is connected to the other devices in a chain, with the first device connected to the SCSI port on the back of the workstation.

Caution: You can connect up to five external SCSI devices to the Indy workstation if the maximum combined cable length of all external SCSI cables does not exceed two meters. Additionally, the last device in the daisy chain must be terminated with an active terminator. An active terminator ships with the SCSI device.

External SCSI devices include a QIC (Quarter-Inch Cartridge) tape drive, a DAT (Digital Audio Tape) drive, a CD-ROM drive, SCSI scanners, and other external SCSI devices such as a hard disk drive.

Follow the steps below to determine what SCSI address to assign, set the SCSI address on the external device, and install the device.

Assigning a SCSI Address to the External Device

You can connect up to five external SCSI devices on the Indy workstation. Each device needs a unique numeric SCSI address to distinguish it from other devices.

- If you currently have two internal drives and no external devices connected to your system, you may use any SCSI address from 3 to 7 for external SCSI devices. (SCSI address 0 is reserved for the controller; addresses 1 and 2 are reserved for the system disk and second
internal disk.)
- If you have at least one external device connected to your system, and you are adding another device, check which address is assigned to the existing external device and then choose another number.

To check which SCSI addresses are already assigned on your workstation, follow these steps:

1. Press and release the power button on the front of the system to power on the workstation.
2. Log in to your account. For more information on logging in, refer to “Turning On the Workstation” on page 20.

3. When the system comes up, select “System Manager” from the System toolchest.
4. Pull down the Hardware menu, and select “Summary.”

   You see a listing of your system’s hardware devices and their address numbers.
5. Decide which number to assign to your new external device.

Caution: Do not assign number 0, 1, or 2. These numbers are reserved.

Setting the SCSI Address on the External Device

Now you need to set the address on the external SCSI device you are installing to reflect the SCSI address you chose.

This is done in a number of ways, depending on the device. Most SCSI devices have a push-button switch, dial, or jumpers that you set to determine the SCSI address.

If the device has a switch or dial on the rear or bottom, follow the steps below. If there is no switch or dial on the device, see the instructions included with the device.

1. Take the device out of its box and locate the address dial or push-button switch. It may be on the rear or bottom of the device.
2. Use a small screwdriver or pencil tip to set the dial or push the buttons to assign the address number you chose in Step 5 above.

Connecting the External SCSI Device

You can attach one or more external devices to the SCSI port on the back of your workstation. Connecting more than one device is called *daisy chaining*. The devices are connected together in a chain, with the first device attached to the SCSI port on the workstation.

To connect the external device, follow these steps:

1. If you have not already shut down and powered off the system, do so now.
   - Press and release the power button on the front of the system to power off the system.

     The system powers off automatically after about a minute.
2. Remove the active SCSI terminator (plastic cap) from the workstation or from the last external device connected to your workstation.
   - If you are connecting the device to the workstation, remove the terminator from the SCSI connector on the rear of the workstation by squeezing the clips on both sides of the terminator and pulling it off, as shown in Figure 5-5. Save the terminator. You need to reconnect it to the system if you remove and do not replace the external device.

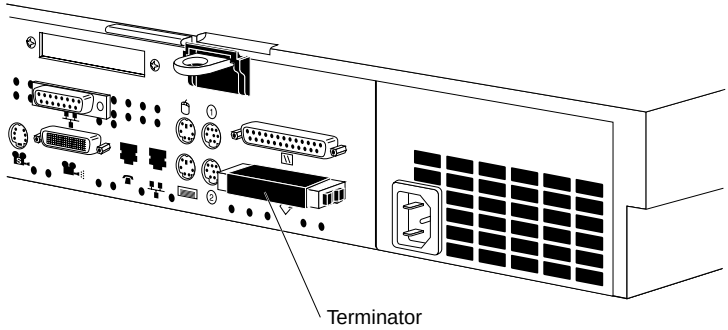

Figure 5-5 Removing the SCSI Terminator From the Indy Workstation

   - If you are daisy-chaining the external device to another external device, remove the terminator (plastic cap) from the connector on the last device in the chain.

3. Choose the appropriate SCSI cable to connect the external SCSI device.

   Caution: For external fast SCSI devices to operate reliably, the maximum combined cable length of all external SCSI cables cannot exceed two meters. Additionally, fast SCSI devices require higher quality cables than early SCSI devices. Use the cable and active terminator that came with the device. Using other types of cables or terminators can results in data loss.

   - If you are attaching the device to the workstation, use the cable with a different connector on each end.
   - To daisy-chain a device to another device, use a centronics 50-pin to centronics 50-pin half-meter cable; that is, it has identical connectors at each end.

4. Connect the SCSI cable.

   - To connect the device to the workstation, connect the flat, smaller end of the cable to the port above the SCSI icon on the back of the workstation, as shown in Figure 5-6.
   - Connect the other end of the SCSI cable to one of the SCSI connectors on the back of the device and secure the clips on each side of the connector.

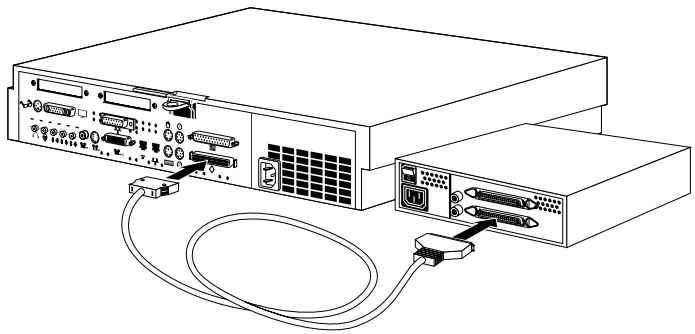

Figure 5-6 Connecting an External SCSI Device to the Indy Workstation

- To daisy-chain the device to another external SCSI device, connect one end of the cable to the open connector on the first device, as shown in Figure 5-7. Connect the other end to one of the connectors on the device you are adding.

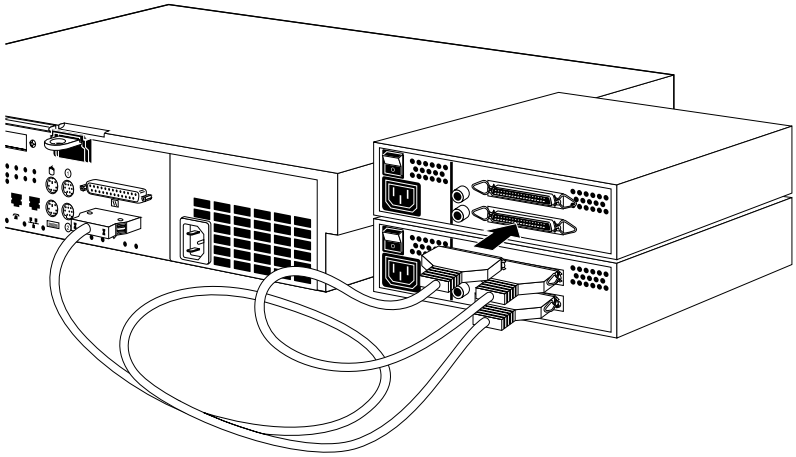

Figure 5-7 Daisy-Chaining an External SCSI Device to Another SCSI Device

5. Connect the active terminator that you received with the external SCSI device to the open SCSI connector on the back of the last device on the daisy-chain, as shown in Figure 5-8. The SCSI connector is designed so that you can put the terminator on only one way if you do not force it.

   Note: The terminator must be an active terminator.

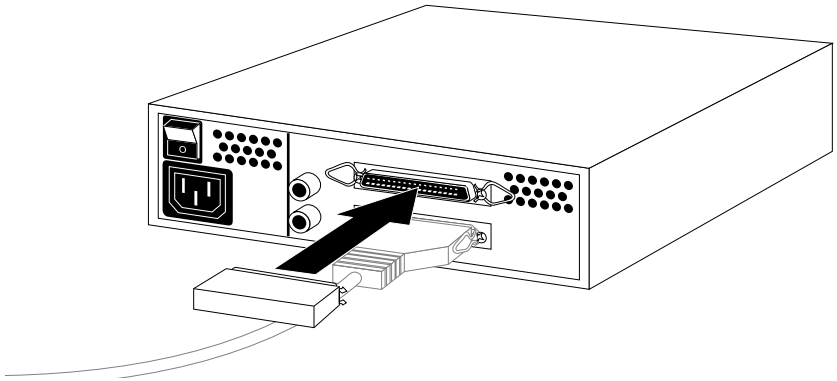

Figure 5-8 Connecting a Terminator to the Last SCSI Device on the Daisy-Chain

6. Connect one end of the power cable that came with the external device to the power connector on the back of the device, as shown in Figure 5-9.

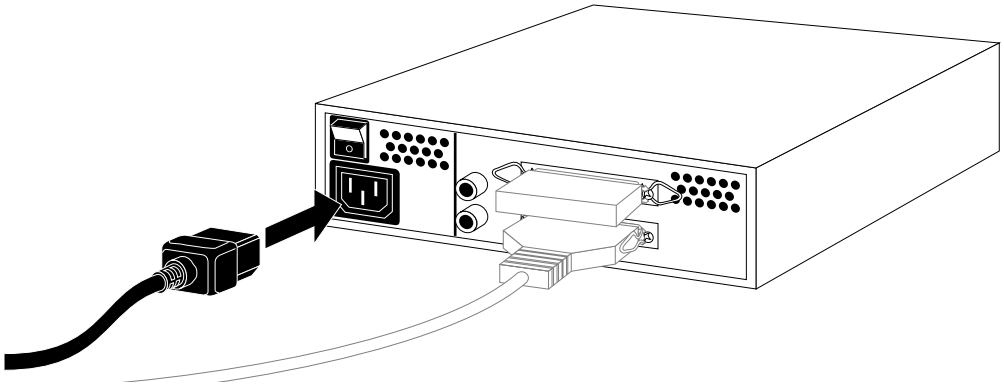

Figure 5-9 Connecting the Power Cable to an External Device

7. Plug the other end of the power cable into a grounded three-pronged electrical outlet.

   Remember to power up the external devices first and then your system to make sure that the devices are recognized.

Testing the External SCSI Device

Follow these steps to check that the system recognizes the new device.

1. Turn on the external SCSI device first. If there is more than one external device, you may turn them on in any order, as long you turn them on before the workstation. The power switch is usually on the back of the device.

   Hint: *Always turn on the external devices before powering up the system. This allows the system to recognize the devices.*

2. Press and release the power button on the front of the system to power on the system.
3. Log in to your account. For more information on logging in, refer to "Logging In to the Workstation" on page 23.
4. If the device is installed correctly, you see an icon for it on the desktop. Double-click the icon to set up the drive.

Figure 5-10 CD-ROM Icon

5. You can also use the System Manager to check that the device is shown correctly.
   - From the System toolchest, select "System Manager."

     You see a window showing Hardware and Shared Resources.
   - Look for the device you installed under Shared Resources.

If the icon for the external device doesn't appear, go to "External SCSI Device Not Working" on page 107.

If You Installed a CD-ROM Drive

If other users are going to access your CD-ROM drive, refer to the online *Personal System Administration Guide* for special instructions. Select "Online Books" from the Help Toolchest. Then select the *Personal System Administration Guide*, and search for "Setting Up SCSI Peripherals."

If You Installed a Printer

If you installed a printer, select "Printer Manager" from the System toolchest, and set up the printer. For more information on setting up the printer, select "Online Books" from the Help toolchest. Select the *Personal System Administration Guide*, and search for "Setting Up Network, Peripheral, and Printer Connections."

If You Installed a Tape Drive

The software automatically recognizes any tape drives you install. The tape drive is ready to use.

For information on backing up data onto a tape, select "Online Books" from the Help toolchest. Then select the *Personal System Administration Guide*, and search for "Backing Up and Restoring Files."

Cleaning DAT Drives

If you use your DAT drive frequently, magnetic dust or debris can collect on the heads of the drive. This can make your DAT tapes unreadable or unwritable.

If the green LED on the front of the DAT drive flashes at about 5-second intervals, you should clean the DAT drive heads. You should clean your DAT drive after about every 30 hours of use.

Note: If the LED on the front of the DAT drive still flashes after you have cleaned the drive heads, you may have a worn out DAT tape. Try using a new DAT tape.

Follow these steps to clean your DAT drive:

1. Insert a cleaning DAT tape.

   Use a cleaning DAT tape authorized by the DAT drive manufacturer.

   The drive loads the tape and starts cleaning the heads.

   Note: Be sure to use a data cleaning tape only. An audio cleaning tape does not work.
2. After about 10 seconds, the drive ejects the tape.

You are finished cleaning the DAT drive.

Installing Serial Devices

This section tells you how to install serial devices. Serial devices include:

- dial and button boxes
- dials box
- digitizer tablet
- console terminals
- modems
- optical mouse
- MIDI (Musical Instrument Digital Interface) devices

Connecting a Serial Device

To install a serial device, follow these steps:

1. Unpack the serial device and cables.
2. Locate the serial ports on the back of the Indy workstation, as shown in Figure 5-11.

   The serial ports are labeled 1 and 2 and are MINIDIN 8 connectors.

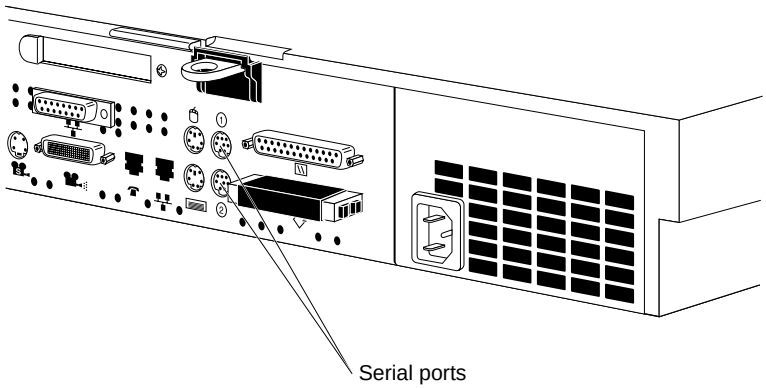

Figure 5-11 Serial Ports on the Rear of the Indy Workstation

3. Connect the serial cable.

   If you are connecting a console terminal, attach it to serial connector 1 only. If you are connecting another device, you can attach it to either connector.

   - Plug one end of the serial cable into the connector on the back of the serial device. See the instructions that came with the serial device for detailed instructions on how to connect the cable to the device.
   - Plug the other end of the cable to the serial connector on the back of the Indy workstation, as shown in Figure 5-12.

   Note: If you are installing a dial and button box, a small serial adapter cable came with the box. First connect the serial adapter cable to the serial cable. Then connect the other end of the serial adapter cable to the Indy workstation.

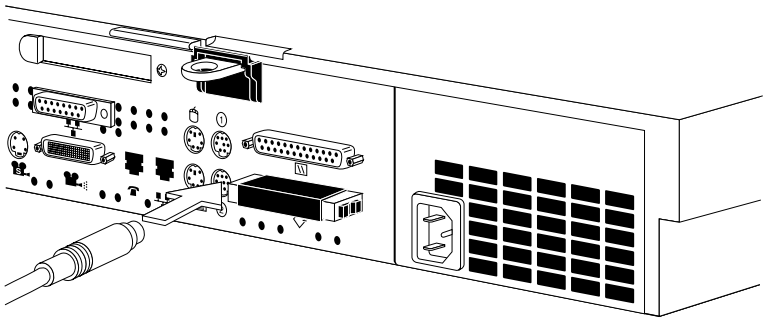

Figure 5-12 Connecting the Serial Cable to the Serial Port

4. Plug in the serial device's power cable.
   - Plug the socket end of the power cable into the power connector on the back of the serial device.
   - Plug the other end into a grounded three-pronged wall outlet or power strip. (Do not use a two-pronged adapter.)

Once the device is connected to the workstation, you must configure it. For information on how to do this, select "Online Books" from the Help toolchest. Then select the *Personal System Administration Guide*, and search for "Setting Up Serial Peripherals."

For information on using other serial cables, turn to Appendix B, "Serial Cables." You are now ready to power up the system.

Installing Audio Devices

The following audio ports are located on the back of the Indy workstation:

- Headphone Output/Line Output 2 (stereo output jack). To support a four-channel configuration, Headphone Output becomes Line Output 2.
- Microphone Input/Line Input 2 (supports stereo microphones). To support a four-channel configuration, Microphone Input becomes Line Input 2.

- Line Input 1 (stereo jack for analog audio input from a tape deck, CD player, or similar source)
- Line Output 1 (stereo jack for analog audio output to a tape deck, amplifier, or similar destination)
- Digital Input/Output (serial digital audio input and output)

Audio jacks accept stereo 3.5-mm phone plugs. See Appendix A, "Cable Pinout Assignments" for cable pinout information.

To connect an audio device, plug the device's cable into the appropriate port, as shown in Figure 5-13.

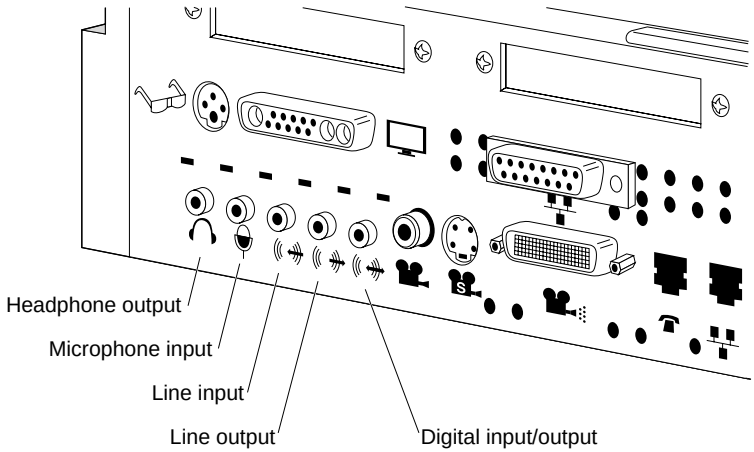

Figure 5-13 Connecting an Audio Device to the Indy Workstation

For more information on audio tools available on your workstation, log in, choose "Online Books" from the Help toolchest, and select the *Media Tools User's Guide*.

Installing Video Devices

The following video ports are located on the back of the Indy workstation, as shown in Figure 5-14:

- Analog s-video input (4-pin mini-DIN)
- Analog composite video input (consumer style RCA jack, NTSC or PAL formats)

  The analog s-video and analog composite video ports accept most consumer or industrial grade video equipment. Some high-end analog video equipment, however, may require a BNC to RCA adapter.
- Silicon Graphics digital video input (60-pin Molex) for the Indy Cam digital video color camera or other digital video devices

  The Silicon Graphics digital video input port is for the Indy Cam digital color video camera. The specifications for this port are similar to the CCIR-601 digital component standard used in professional video applications. For more information on connecting and using the Indy Cam camera, see “Using the IndyCamera” on page 31.

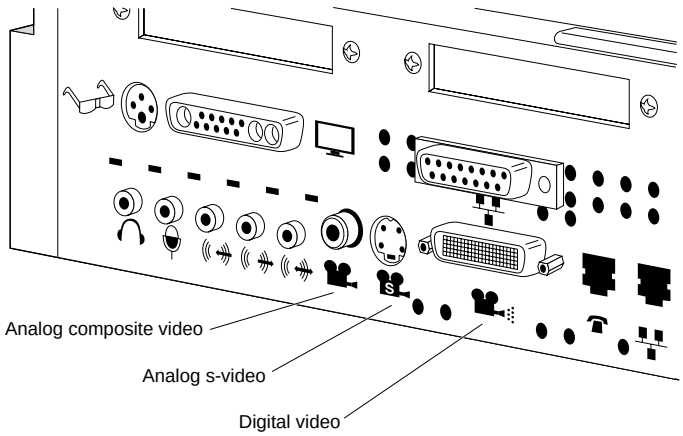

Figure 5-14 Connecting a Video Device to the Indy Workstation

For more information on video tools available on your workstation, log in, choose "Online Books" from the Help toolchest, and select the "*Media Tools User's Guide*."

For cable pinout information on the Indy video ports, refer to Appendix A, "Cable Pinout Assignments."

Chapter 6

Installing and Removing Software

This chapter describes how to install and remove Silicon Graphics, Inc. software products on your Indy workstation.

Installing and Removing Software

This chapter describes the software installation tools that you use to install a new version of the operating system, and to install optional software products that you received from Silicon Graphics, Inc. To install products from other vendors, please see the software installation instructions that accompany the products.

You can install software from:

- a CD-ROM drive that's connected either to your own system or to another Silicon Graphics system on your network.
- A remote directory on another Silicon Graphics system or any system that supports *bootp* and *tftp*.

Only the *Administrator* can install or remove software if there is a password on the Administrator (root) account.

If you need advanced information on software installation or troubleshooting, please see the online *Software Installation Administrator's Guide*.

About the Software Installation Tools

Silicon Graphics, Inc. ships two software installation tools:

- *Inst* is a command-line tool for installing new versions of the operating system. This tool works when the system is running a small version of the operating system (the miniroot) to minimize the possibility of installation errors. You can also use this tool to install optional products that do not require miniroot installation, but Silicon Graphics, Inc. recommends using the graphical Software Manager.
- Software Manager is a graphical tool for installing optional products. This tool works only when the system is up and running; you start it by choosing "Software Manager" from the System toolchest.

Note: Software Manager is available on systems running IRIX release 5.3 and greater.

For more information on installing optional products, see the Software Manager's online help, or choose "Online Books" from the Help toolchest, and see Chapter 4 of the online *Personal System Administration Guide*.

For information on installing a new version of the operating system software, see the next section in this chapter. For detailed information on using *Inst*, see the online *Software Installation Administrator's Guide*.

Installing a New Version of the Operating System Software

The *Administrator* can install a new version of the IRIX operating system and any optional software by following these steps:

1. Make a full system backup. For more information, select "Online Books" from the Help toolchest and search for "Backing Up and Restoring Files" in the online *Personal System Administration Guide*.
2. If you do not have a CD drive connected directly to your system, find a CD drive on your network.
   - Choose "Disk Drives" from the Search For rollover menu in the Find toolchest.
   - In the Search window, choose "Type" from the Match menu, and choose "CD-ROM" from the *menu button* next to *whose type is*. See the online help in the Search window for details.
   - Click the *Search* button to find the drive.
   - When the drive's icon appears, it is labeled *systemname*:cdrom. *systemname* is the name of the system to which the drive is connected.

   Note: If the search does not find a device that you know is available, choose "Online Books" from the Help toolchest and see "Troubleshooting Network Errors" in the online *Personal System Administration Guide*.

   - Contact the administrator of the system to which the drive is connected, and make sure remote installations are allowed from that CD drive. For more information, select "Online Books" from the Help toolchest and search for "Allowing Remote Users to Install Software From Your CD Drive" in the online *Personal System Administration Guide*.

3. Insert the operating system CD into the drive you are going to use.
4. Check the full pathname of the drive.
   - If you're using a drive that's connected to your own system, double-click the drive's icon. The title bar shows the full pathname (for example, */CDROM*); write down the pathname because you will need this in step 7.
   - If you're using a remote drive, double-click its icon. A window appears in which the field labeled "Open Remote Directory" shows the full pathname of the CDROM directory (for example, */CDROM*). Write down the full name, then click the *Cancel* button to close this window.
5. Read and, if you like, print all or part of the online release notes.
   - If you're using a drive that's connected to your own system, double-click the drive's icon, then, in the directory view window that appears, double-click the CDgrelnotes icon to view the release notes. To print all or part of the release notes, choose "Print" from the File menu.
   - If you're using a remote drive, double-click its icon. In the Open Remote Directory window, click the *OK* button, then, in the directory view window that appears, double-click the CDgrelnotes icon to view the release notes. To print all or part of the release notes, choose "Print" from the File menu.
6. Shut down the system, restart it, and start the software installation tool.
   - Choose "System Shutdown" from the System toolchest.
   - When you see the dialog box that says *Are you sure you want to shut down the system right now,* click on the *OK* button.

     You see a dialogue box that says *System is Shutting Down*.
   - When you see a dialogue box or message that says *Okay to power off*, click the *Restart* button in the dialogue box, or press any key.
   - When you see a dialogue box or message that says *Starting up the system*, click the *Stop for Maintenance* button, or press **<Esc>**.
   - Click the icon labeled *Install System Software*.

7. Specify the location of the new software to install.
   - If the CD is in a drive connected to your system, click the *Local CD-ROM* icon. When the notifier appears asking you to insert the CD, insert the CD in the drive, and click *Continue*.
   - If the CD is in a drive that's connected to another system on the network, click the *Remote Directory* icon. When a notifier appears asking you for the remote hostname, type the system's name, a colon(:), the full pathname of the CD (which you found in step 4), and add *dist* to the end. For example, to access a CDROM on the system mars, type:

     `mars:/CDROM/dist`

     When the notifier appears asking you to insert the CD, insert the CD in the drive and click *Continue*.

     Note: If you see error messages after you specify the location, see "System Cannot Find the New Software" on page 97.
8. When the system finds the software, it takes several minutes to copy the software installation tools onto your system. The system is ready to install software when you see the *Inst* menu:

```
1. from [source]
2. list [keywords] [names]
3. go
4. install [keywords] [names]
5. remove [keywords] [names]
6. keep [keywords] [names]
7. step [keywords] [names]
8. view [args]
9. conflicts [choice...]
10. help [topic]
11. admin
12. quit

Inst>
```

9. Install all or some of the *subsystems* that make up the operating system and optional software.

   - To install all of the *default subsystems*, type:

     go

   - To install all optional and required subsystems that are available on the CD, type:

     install all

     go

     Note: Usually you do not want to install all subsystems, as they occupy a very large amount of disk space. See the online release notes for product sizes.

   - To select only required subsystems or to select all required subsystems plus some optional subsystems, see "Choosing Subsystems to Install or Remove" on page 93.

   If you see an error message that says the system cannot find the software, see "System Cannot Find the New Software" on page 97. If you see any other messages, see "System Cannot Complete an Installation" on page 98.

   During the installation, you see several progress report messages. The installation is complete when you see this message:

   ```
   Installation and removals were successful
   1. Continue with the session
   2. Quit now
   Please enter a choice [1]:
   ```

   If you see any other messages, see "System Cannot Complete an Installation" on page 98.

   - To quit *Inst*, go on to the next step.
   - To install optional software from another CD, press **<Enter>**. You may see several messages as *Inst* rebuilds its internal data files. Manually eject the CD from your CDROM drive by pushing the eject button; insert the next CD in the drive, then type:

     from /CDROM/dist

     Go back to step 7 to install the software.

10. When all the software is installed, quit *Inst* by typing:

    2

    You may see several messages as *Inst* communicates your changes to the operating system, and configures the new kernel.

    During its exit procedure, *Inst* may "requickstart" your machine. This process synchronizes the libraries and executables on your machine. This process can take up to 20 minutes. During this time you may see these messages:

    ```
    Building one time quickstart database.
    Requickstarting necessary files.
    Automatically reconfiguring the operating system.
    ```

11. The software is successfully installed and your system is ready to restart when you see this message:

    ```
    Ready to restart the system. Restart? [y, n]
    ```

    Type **y** then press **<Enter>**.

    If you see a different message or question, see "System Reports Errors After an Installation" on page 99.

    The system starts up as usual.

12. When the login window appears, log in to your own account.

13. See your Release Notes by choosing "Release Notes" from the Help toolchest, then by choosing products from the Products menu.

    The Release Notes for each product list the directories where applications are stored on your disk so you can drag icons onto your desktop or onto a particular page of the Icon Catalog. The Release Notes also cover new features and known problems with the product.

Choosing Subsystems to Install or Remove

When you are running *Inst*, you can see all the *subsystems* that make up the products, and check whether they have been selected for installation by typing:

```
list
```

You see one or more screens of information.

- To see the next screen, press the **<spacebar>**.
- To stop the listing, press **<q>**; you see the `Inst>` prompt.
- To see the *Inst* menu again, press **<?>**.
- To see online help, type: **`help`**

Note: *The remainder of this chapter contains detailed examples of Inst listings and commands that apply to only the IRIX 5.3 version of Inst.If you are running an earlier or later version of Inst, please use the online help that is available by typing* **`help`** *at the* `Inst>` *prompt.*

list displays a key to the listing, followed by the list of available subsystems. The first three columns of the listing show:

- whether the available (usually newer) version of a subsystem is selected for installation (i) or is not selected (k)

  Note: If you have a version of a subsystem already installed and you would like to remove it while other software is being installed. To do this, type **`remove`** <*subsystem*> at the `Inst>` prompt.

- whether the available software is a new product that has never been installed (N), or is an upgrade to (U), is the same version as (S), or is an older version of (O) a product that is already installed. If no character appears in this column, the product has been available for installation before, but has never been installed; it is considered a 'Not Installed' product.

Here are some samples of the first three columns of subsystem listings:

`i U nfs.sw.nis`
: A newer, upgrade version (`U`) of this subsystem (`nfs.sw.nis`) is available and is selected for installation (`i`). It is part of the NFS product (`nfs`).

`k S pfa.sw.lib`
: An identical (same) version (`S`) of this subsystem (`pfa.sw.lib`) is available, so *Inst* assumes you want to keep (`k`) the currently installed version. It is part of the Power Fortran product (`pfa`).

`k D insight.sw.client`
: The version of this subsystem (`insight.sw.client`) that is available is a downgrade (`D`) to the subsystem that is already installed, so *Inst* assumes you want to keep (`k`) the currently installed version. It is part of the IRIS Insight product (`insight`).

`i N dmedia_tools.sw.soundtools`
: The subsystem (`dmedia_tools.sw.soundtools`) that is available is a new product (`N`), which means it has never been installed or available for installation before. It is selected for installation (`i`) because it is a default subsystem. It is part of the Digital Media Tools product (`dmedia_tools`).

`systour.sw.eoe`
: This subsystem (`systour.sw.eoe`) has been available for installation before but has never been installed, and it is not selected for installation (no letters precede it). It is part of the System Tour product (`systour`).

The other columns of the listing show:

- the name of the subsystem
- if the subsystem is required for system operation (r), is selected as a default subsystem by the manufacturer (d), and/or must be installed when the system is running the miniroot (b)

  Note: Most software that is required for system operation must be installed from the miniroot, as well as some optional products. The steps in "Installing a New Version of the Operating System Software" on page 88 detail a miniroot installation.
- how much additional disk space (in blocks, where 1 KB = 2 blocks) the subsystem will occupy (a positive number such as +100 shows that it will take an additional 50 KB, while a negative number such as -60 shows that the new version of the subsystem is smaller than the old version and will free 30 KB)
- a brief description of the subsystem

At the end of the listing, *Inst* shows whether you have enough disk space to install all the subsystems that are selected for installation, including temporary overhead needed for the installation process. For more information on the products and subsystems, see the product's release notes.

You can change which subsystems are selected for installation in these ways:

- To select a subsystem for installation, type:

  `install` *subsystem*

  For example, when a new version of a product is available and you have an older version installed, *list* shows you this information:

  ```
  U dmedia_tools.sw.soundtools
  U dmedia_tools.sw.movietools
  U dmedia_tools.data.prosonus
  ```

  To select one subsystem for installation, type:

  ```
  install dmedia_tools.sw.soundtools
  ```

  To select all subsystems of the product for installation, type:

  ```
  install dmedia_tools
  ```

list then shows this information:

```
i U dmedia_tools.sw.soundtools
i U dmedia_tools.sw.movietools
i D U dmedia_tools.data.prosonus
```

- To prevent a new subsystem or a different version of an existing subsystem from being installed, type:

  keep *subsystem*

  For example, when a large, new subsystem that you do not want to install is selected for installation, *list* shows this information:

  ```
  i N dmedia_tools.data.prosonus
  ```

  To prevent *Inst* from installing it, type:

  ```
  keep dmedia_tools.data.prosonus
  ```

  list then shows this information:

  ```
  N dmedia_tools.data.prosonus
  ```

- To remove a subsystem that is currently installed, and to prevent a new version from being installed in its place, type:

  remove *<subsystem>*

  For example, when a subsystem is already installed and a newer version is available, *list* shows this information:

  ```
  i U dmedia_tools.data.prosonus
  ```

  To remove the current version and prevent *Inst* from installing the new version, type:

  ```
  remove dmedia_tools.data.prosonus
  ```

  list then shows this information:

  ```
  U dmedia_tools.data.prosonus
  ```

When you have made your choices, start the installation. At the `Inst>` prompt, type:

```
go
```

Troubleshooting Software Installation

This section covers the three most common problems that may arise during software installation. See the section that describes the problem you have encountered.

- "System Cannot Find the New Software" on page 97
- "System Cannot Complete an Installation" on page 98
- "System Reports Errors After an Installation" on page 99

For comprehensive troubleshooting information, see the online *Software Installation Administrator's Guide*.

System Cannot Find the New Software

The system cannot find the software when:

- There is no CD in a drive that you specified.
- The remote CD drive that you specified is not enabled for remote software installation. Contact the administrator of the system to which the drive is connected, and make sure remote installations are allowed from that CD drive. For more information, select "Online Books" from the Help toolchest and search for "Allowing Remote Users to Install Software From Your CD Drive" in the online *Personal System Administration Guide*.
- Your system cannot contact the system on the network that has the software. Select "Online Books" from the Help toolchest and search for "Troubleshooting General Network Errors" in the online *Personal System Administration Guide*.
- You entered an incorrect directory name.

  This typically happens when you are installing from a remote CD drive, and the drive is not accessible from (is not mounted at) the */CDROM* directory. Choose "Disk Drives" from the Find toolchest to find the drive, insert the CD into the drive, then double-click it to see the directory from which you can access it.

  Also, be sure to complete the full pathname with *dist*, which is the name of the directory on the CD in which the software is stored. For example, the full pathname for new software on a CD whose pathname is */drives/cdrom* on a system named *mars* typically is *mars:/drives/cdrom/dist*

System Cannot Complete an Installation

Typically the system cannot complete an installation when:

- There is not enough disk space to install all the products you selected for installation. In this case, you could:
  - Select fewer *subsystem*s to install (see "Choosing Subsystems to Install or Remove" on page 93).
  - Remove subsystems that are already installed (see "Choosing Subsystems to Install or Remove" on page 93).
  - If your system is up and running (that is, if it is not doing a miniroot installation such as installing new system software), quit *Inst* and remove or archive files or directories. For more information, select "Online Books" from the Help toolchest, and see "Freeing Up Disk Space" in the online *Personal System Administration Guide*.
- You need to install companion or prerequisite subsystems, or you have chosen to remove subsystems that are prerequisites for subsystems that are already installed or are selected for installation. In this case, you may see this error message:

  ```
  ERROR: Conflicts must be resolved.
  ```

  After this message, *Inst* lists each subsystem that is causing a conflict, and presents options for resolving the conflict. Read the description of each conflict and its resolution options, then choose an option using these guidelines:
  - When you have selected an optional product that is incompatible with the rest of the operating system, do not install it.
  - When you have selected incompatible products, choose to install the newer version of a product.
  - When the system is missing a prerequisite product or subsystem, choose to install the prerequisite.

  Each option is numbered; for example, option 1 for the first conflict is numbered 1a; option 2 for the same conflict is 1b. You can choose only one option per conflict. (For more information, or if your system is not running the IRIX 5.3 release, type: **`help conflicts`**.) To choose option 1a, at the `Inst>` prompt type:

  `conflicts 1a`

If you have several conflicts, you can enter your choices all at once. For example, to choose 1a, 2b, and 3b, type:

```
conflicts 1a 2b 3b
```

When all conflicts are resolved, you see this message:

```
No conflicts
```

To resume the installation, type:

```
go
```

System Reports Errors After an Installation

If the system reports errors after an installation is complete, read the error message carefully, and follow its instructions. The message suggests that you type **`help`** <*topic*> for online instructions.

Warning: If the errors occur after you install new system software, do not turn off the system or press the Reset button. This could result in a system that cannot restart.

If you cannot solve the problem using the online help, contact your local support organization.

Chapter 7

Troubleshooting

This chapter describes how to diagnose hardware problems on your Indy workstation. It also explains how to run diagnostic tests.

Troubleshooting

This chapter includes information on:

- diagnosing some of the more common hardware problems
- using the system tests (power-on, interactive diagnostic environment, and confidence) to diagnose hardware problems
- recovering from a system crash
- disabling the workstation password
- service and support

Diagnosing Hardware Problems

In the section "Common Problems" on page 104, you'll find a listing of some of the more common problems that you may have with your system. If the problem you have is not listed there, you can use the system tests, as described below, to further diagnose hardware problems before calling your service provider.

Note: If your system is under warranty, or if you have a full service maintenance contract, call your service provider before removing any parts.

- Power-on tests run automatically on the major hardware parts of the system each time it is turned on. If the tests find a faulty part, the power indicator light (called an LED) on the front of the system will be red and there will probably be an error message. For a description of the LED colors and error messages, and how to interpret them, go to "Power-on Tests" on page 108.

- Interactive Diagnostic Environment (IDE) tests check your system's hardware when you suspect a problem. These tests are more comprehensive than the power-on tests. If these tests find a fault, you are informed with an error message. To run the IDE tests, go to"Interactive Diagnostic Environment (IDE) Tests" on page 113.
- Confidence tests verify that your keyboard, mouse, monitor, or a peripheral is working correctly. To run the confidence tests, go to "Confidence Tests" on page 115.

Common Problems

Here are a few of the more common hardware problems and the actions you can take.

No Power to the System

1. Check that the power cable is firmly connected to the rear of the workstation and to a working wall outlet.
2. If you're using a power outlet strip, make sure it is turned on.

Printer Problems

Troubleshooting problems with printers can be found in the *IRIS Essentials* online documentation and help. From the Help toolchest, choose "Desktop Help" and look for "Troubleshooting Printing."

Mouse Not Working or Erratic

With regular use, your mouse collects dust and particles that can build up inside it and affect its performance.

To clean the mouse:

1. Disconnect the mouse cable from the Indy workstation.
2. Turn the mouse upside down. Remove the circular plastic cover by sliding the cover towards the mouse cable and lifting it out.
3. Remove the mouse ball.
4. Look inside the mouse and locate the two metal rollers.
   - Use a soft, clean, dry cloth or tape head cleaner to wipe off any oil or dust that has accumulated on the surface of the rollers.
   - Use your finger to rotate each metallic roller. The rollers should rotate easily, without sticking.
5. Gently blow into the mouse to remove any loose particles.
6. Wipe the mouse ball with a soft, clean, dry cloth.
7. Place the mouse ball back in the mouse. Replace the cover. Slide the cover away from the mouse cable until it clicks into place.
8. Reconnect the mouse cable firmly to the top connector (below the mouse icon) on the rear of the system.
9. If the mouse still does not work properly, run the confidence test for the mouse (go to “Mouse Confidence Test” on page 121), and then call your service provider.
10. If the mouse does not work at all, call your service provider.

Monitor Image Distorted or No Image

1. Make sure the monitor is turned on. The power indicator light (LED) on the front of the monitor is on if the monitor is turned on.
2. Check that the monitor video cable is firmly connected to both the monitor and the Indy workstation, and that the thumbscrews are screwed in all the way.
3. Check that the power cable is firmly connected to the monitor and to a working wall outlet.
4. Make sure that the brightness knob is set to provide sufficient light to the screen.
5. If the distortion persists, call your service provider.

Internal Floptical Drive or Second Hard Disk Drive Not Working

1. If no external SCSI devices are connected to the system, make sure there is an active terminator connected to the SCSI port on the rear of the system. The Indy workstation ships with an active terminator connected to the SCSI port.
2. Try reinstalling the drive, making sure that the SCSI ribbon and power cables are connected properly. Refer to “Installing an Internal Floptical Drive or Second Hard Disk Drive” on page 63.
3. Verify that the system recognizes the drive. Turn on the system, log in, and choose “System Manager” from the System toolchest; then look under the Hardware listing for the drive.
4. If it is a floptical drive, run the confidence test for the floptical drive. Go to “Floppy or Floptical Drive Confidence Test” on page 118.
5. If it is a floptical drive, check that the SCSI address of the drive is set to 2. Go to for more information on how to do this. (For drives not supplied by Silicon Graphics, refer to the documentation included with the drive.)
6. If the problem persists, call your service provider.

External SCSI Device Not Working

1. Make sure you've turned on all external devices before turning on the system.
2. Verify that the system recognizes the device. Turn on the system, log in, and choose "System Manager" from the System toolchest; then look under the Hardware listing for the device.
3. Follow these steps to ensure that the device has been installed correctly. (Refer to "Installing External SCSI Devices" on page 70.)
   - Check that the SCSI and power cables are connected properly.
   - If the device is the last one on the daisy-chain, check that it has an active terminator connected to it. (The active terminator comes with the SCSI device.)
   - Check that the SCSI address of each external device does not conflict with other SCSI devices. Do not use SCSI address 1 or 2 for external devices; they are reserved.
4. If more than one external SCSI device is connected to the system, make sure that the combined length of all external SCSI cables does not exceed two meters.
5. Check that no more than five external SCSI devices are connected to the workstation.
6. If the device is a tape drive, make sure you're using tapes of the correct density. To find out which densities are supported on the Indy workstation, from the Help toolchest choose "Online Books," select the *Personal System Administration Guide*, and look for "Maintaining the System." Then search for "About Tape Formats and Capacities."
7. If the device is a CD-ROM or tape drive, run the confidence test for the device. Go to "Quarter-Inch Cartridge (QIC) Tape and Digital Audio Tape (DAT) Drives Confidence Test" on page 122.
8. If the problem persists, call your service provider.

No Indy Cam Image or Wrong Color Image

After double-clicking on the *Indy Cam* icon on the default desktop, if you do not get an image on the screen, follow these steps:

1. Check that the camera cable is connected to the port above the digital camera icon on the back of the Indy workstation. Refer to "Using the IndyCamera" on page 31.
2. Make sure that the plastic lens cover on the camera is pushed aside to expose the lens.
3. Check that you removed the lens cap covering the lens.
4. If the image is not clear, focus the image by twisting the lens in either direction.
5. Fluorescent lighting can cause a red hue to the image. If the image is the wrong color, you can adjust the color by using a method called "white balancing." For information on how to do this, go to "Adjusting the Color or the Image" on page 33.
6. If the problem persists, call your service provider.

Power-on Tests

When you turn on the power button, your system goes through these steps:

- The power indicator light (called an LED) on the front of the machine is amber first and then changes to green with the boot "tune." The system initiates power-on diagnostics.
- The LED light is amber while the system runs power-on diagnostics for about five seconds; then the disk spins up. This takes about 15 seconds.
- When the system passes all power-on tests, the LED turns green.
- The system boots the IRIX operating system or brings up a menu if you configured your system to do so.

If the LED light doesn't turn to green after the power-on tests, the tests found a faulty part, and the LED light will be either solid red or blinking red. Table 7-1 summarizes the symptoms and possible causes, which are described in detail in the following sections.

Table 7-1 Troubleshooting Symptoms and Probable Causes

Indicator	Symptom	Cause
No power indicator light (LED)	No power to system	Power supply failure. Check rear of system for fan operation or power cable not connected.
No boot "tune"	No audio	Faulty speaker. Faulty system board or CPU module. Volume set too low or set to zero.
Blinking red power indicator light (LED)	Memory diagnostic failure	SIMM failure. Check error messages for faulty SIMM.
Solid red power indicator light (LED)	One of the parts of the workstation is faulty	Graphics board, system board, or CPU module failure.

No Visible Light from the LED with No Error Message

If during power-on, the power indicator light (LED) on the front of the system doesn't light up and no error message appears on the screen, follow these steps:

1. Make sure that the power cables are plugged in to a working wall outlet.
2. If you're using a power outlet strip, check that it is turned on.
3. Press the power button again.
4. If you hear the boot "tune" and the system drive spinning up, check if you can feel the airflow and hear the sound of the fan at the back of the power supply. If you can, then the LED may be broken.
5. If there is no airflow and no sound of the fan, the power supply is probably faulty.
6. Contact your service provider for further instructions.

Blinking Red LED with No Error Message

If the power indicator light (LED) is blinking red and no error message appears on the screen, one or more SIMMs (memory modules) may be faulty.

1. Press the power button on the front of the workstation to power off the system.
2. After the system shuts down, press the power button to power it on again.
3. If you still see the message, check that the memory modules are seated all the way into the sockets. Go to"Checking the SIMM Installation Visually" on page 47 and follow the instructions there.

Blinking Red LED with an Error Message

If the power indicator light (LED) on the front of the system is blinking and a message appears on the screen, look for one of the messages below and follow the instructions.

If you see this message:

```
No usable memory found. Make sure you have a full bank
(4SIMMs)
```

1. Press the power button on the front of the workstation to power off the system.
2. After the system shuts down, press the power button to power it on again.
3. If you still see the message, check that the memory modules are seated all the way into the sockets. Go to"Checking the SIMM Installation Visually" on page 47 and follow the instructions there.

If you see this message:

```
Check or replace: SIMM#
```

1. Press the power button on the front of the workstation to power off the system.
2. After the system shuts down, press the power button to power it on again.

3. If you still see the message, check that the memory modules are seated all the way into the sockets. # represents the SIMM number that failed the test (for example, SIMM S1, SIMM S2).

Go to "Checking the SIMM Installation Visually" on page 47 and follow the instructions there.

Solid Red LED with No Error Message

If the power indicator light (LED) on the front of the system is solid red and does not turn green, one of the parts in the workstation is faulty.

Press the power button to power off the system. Wait a few seconds and then press it again to power on again. If the LED is still solid red, contact your service provider for further instructions.

Solid Red LED with an Error Message

If the power indicator light (LED) on the front of the system is solid red and a message appears on the screen, look for one of the messages below and follow the instructions.

If you see this message:

```
Check or replace: Graphics board
```

1. Press the power button on the front of the workstation to power off the system.
2. After the system shuts down, press the power button to power it on again. If you get the same error message, try running the Interactive Diagnostics Environment (IDE) tests. Go to "Interactive Diagnostic Environment (IDE) Tests" on page 113.
3. Contact your service provider for further instructions.

If you see this message:

```
Check or replace: CPU module
```

1. Press the power button on the front of the workstation to power off the system.
2. After the system shuts down, press the power button to power it on again. If you get the same error message, try running the Interactive Diagnostics Environment (IDE) tests. Go to "Interactive Diagnostic Environment (IDE) Tests" on page 113.
3. Contact your service provider for further instructions.

Green LED but the System Has a Problem

If the power indicator light (LED) on the front of the system is green, the system has passed the power-on tests. However, if you suspect a problem with the system, you can use the following diagnostics tests to help isolate the problem before calling your service provider.

- "Interactive Diagnostic Environment (IDE) Tests" on page 113
- "Confidence Tests" on page 115

Interactive Diagnostic Environment (IDE) Tests

When you power on the system, power-on tests check the system's essential hardware parts. Interactive Diagnostic Tests give you a greater depth of testing capabilities. Diagnostic tests take at least 30 minutes to run, or up to an hour if you have a large amount of memory or more than one hard disk.

Note: You can stop the tests at any time by pressing the **<Esc>** key.

The system stops the testing if it finds errors and reports failures on the screen.

Follow these steps to run the tests:

1. Press and release the power button on the front of the workstation to power off the system.

   After a few seconds you see the notifier shown in Figure 7-1 and the system shuts down automatically.

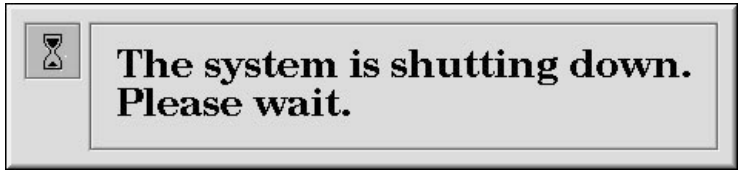

Figure 7-1 System Shutdown Notifier

2. Press and release the power button to turn on the system.

   You see the notifier shown in Figure 7-2

Figure 7-2 Running the Power-on Diagnostics Notifier

After the system passes diagnostics tests, you see the notifier shown in Figure 7-3.

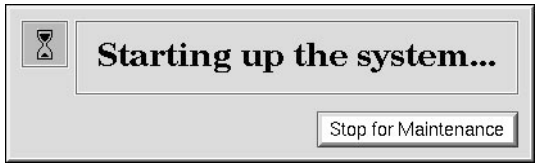

Figure 7-3 System Startup Notifier

3. Click *Stop for Maintenance*, or press **<Esc>**. The System Maintenance menu appears.

   If you cannot reach the System Maintenance menu, your system is faulty. Contact your service provider.

4. Start diagnostics by clicking the *Run Diagnostics* icon on the System Maintenance Menu or by typing:

   3

5. You see a message similar to this:

   ```
   SGI Version 5.3 IP24 IDE field
   October 22, 1994
   +
   ```

   Note: If you do not see this message, you cannot run the diagnostics. You may have a faulty disk drive. Contact your service provider.

   The character on the last line (next to the cursor) shows a spinning combination of slashes and dashes while the tests are running. Also, the LED on the front of the system blinks slowly throughout the testing process.

   Included in the diagnostics is a series of graphics tests. During these tests, the screen goes blank and display various images. The screen may be blank for 10 minutes or more.

6. Watch for messages.

   If the system's hardware is completely healthy, after 10 to 30 minutes (may be more if you have more than one hard disk or a lot of memory) you see this message:

   ```
   Diagnostic tests completed with no failures detected.
   Press <Enter> to continue.
   ```

- Press **<Enter>** and then **<Esc>** to return to the System Maintenance menu, where you can restart the system by clicking on the *Start System* icon. If problems persist, or if you still cannot restart the system, you may have a software problem. See "Recovering from a System Crash" on page 123.

If the diagnostics find a problem, you see a message similar to the following:

```
ERROR: Failure detected on the <name>
```

name is the internal part or circuit, peripheral, or subsystem that is faulty.

7. Record this information and call your service provider for further instructions.

Confidence Tests

If your keyboard, mouse, monitor, audio subsystem, Indy Presenter™, ISDN connection, or one of the SCSI devices (excluding hard disks) isn't working properly, use the confidence tests to verify that each device is working.

To run the confidence tests, choose "Run Confidence Tests" from the System toolchest. You see the form shown in Figure 7-4, with icons for each device for which a confidence test exists. Instructions on how to run each test are contained in the sections below. If you have an ISDN connection, you'll see an icon for it too.

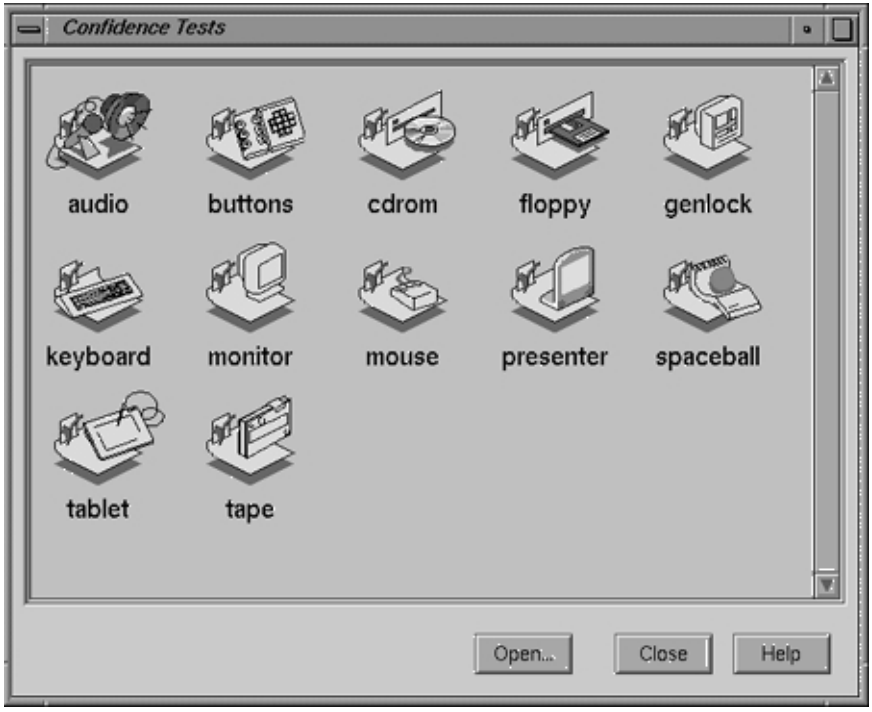

Figure 7-4 Confidence Tests Form

Audio Confidence Test

If you are running an audio application and you do not hear the audio output, follow these steps:

1. Press the right audio control button on the front of the system to increase the volume.
2. Make sure all cables are connected to the correct connectors on the rear of the system. (Refer to "Installing Audio Devices" on page 80.)
3. If you have headphones connected, disconnect them. Run the audio confidence test:
   - From the System toolchest, choose "Run Confidence Tests." You see the Confidence tests form.
   - Select the *audio* icon and click *Open*, or double-click the icon.

You see the form shown in Figure 7-5. The Audio Control Panel is also displayed in a separate window.

Figure 7-5 Audio Confidence Test Form

- Follow the instructions on the form.
- If your audio is responding and you have problems with your headphones, connect the headphones and follow the instructions on the form.

4. To exit the confidence test, click *Quit*.

If the test indicates a faulty audio system, contact your service provider for further instructions.

Dial and Button, Tablet, and Spaceball Confidence Tests

You'll find instructions on how to run the confidence test for the dial and button box, digitizer tablet, and Spaceball in the installation booklet that comes with each option.

CD-ROM Drive Confidence Test

If you suspect a problem with your CD-ROM drive, first try the suggestions in the section "External SCSI Device Not Working" on page 107, then follow these steps:

1. Run the CD-ROM drive confidence test:
   - From the System toolchest, choose "Run Confidence Tests." You see the Confidence Tests form.
   - Select the *cdrom* icon and click *Open* or double-click the icon.

     You see the CD-ROM drive confidence test form.
2. Start the CD-ROM drive test.
   - When you test the CD-ROM drive, load a CD into the drive.
   - Double-click the *cdrom* icon to start the test. You see the CD-ROM drive test in progress.

   When the test is complete, you see the CD-ROM drive test completion notifier.
3. Click *Continue* to dismiss the notifier.

If the drive doesn't pass the test, follow the instructions in"Ordering a Replacement Part" on page 134 to order a replacement part. Then contact your service provider for further instructions.

Floppy or Floptical Drive Confidence Test

If you suspect a problem with your floptical drive, first try the suggestions in the section "Internal Floptical Drive or Second Hard Disk Drive Not Working" on page 106, then follow these steps:

1. Run the floppy confidence test: (Use this test for the floptical drive too.)
   - From the System toolchest, choose "Run Confidence Tests." You see the Confidence Tests form.
   - Select the *floppy* icon and click *Open,* or double-click the icon.
2. Select the icon that represents your floppy or floptical drive and click *Open*, or double-click the icon.
3. Select the density of the floptical or floppy installed in your system.

Caution: *The drive destroys any information on the disk in the process of testing the hardware.*When you test the drive, use a disk that is blank or that doesn't have information that you need to keep.

When the test is complete, you see the floppy drive test completion notifier.

4. Click *Continue* to dismiss the notifier.

If the test indicates a faulty drive, follow the instructions in "Ordering a Replacement Part" on page 134 to order a replacement part. Then contact your service provider for further instructions.

Keyboard Confidence Test

If the keyboard is not responding to input, follow these steps:

1. Check that the keyboard cable is firmly connected to the connector above the keyboard icon on the rear of the system.
2. Run the keyboard confidence test:
   - From the System toolchest, choose "Run Confidence Tests." You see the Confidence Tests form.
   - Select the *keyboard* icon and click *Open,* or double-click the icon.

     You see the form shown in Figure 7-6.

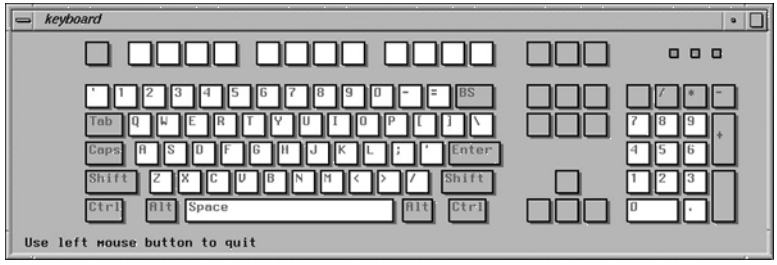

Figure 7-6 Keyboard Test

   - To use the test, press the different keys on the keyboard. The picture on the screen should highlight the key that you press.

If the graphic doesn't reflect the key that you press, you may have a problem with the keyboard or with the cable that connects the keyboard to the system.

Also, if you're using a keyboard other than the Silicon Graphics supplied keyboard, the key layout may be different.

3. Close the keyboard test by clicking the button in the top left-hand corner of the keyboard graphic and selecting *Exit*.

If your keyboard is faulty, follow the instructions in "Ordering a Replacement Part" on page 134 to order a replacement part. Then contact your service provider for further instructions.

Monitor Confidence Test

If the display is distorted (for example, if it has wavy lines, measles, or looks unusual), follow these steps:

1. Check that the monitor video cable is firmly connected to both the monitor and the Indy workstation, and that the thumbscrews are screwed in all the way.
2. Check to make sure that the brightness knob is set to provide sufficient light to the screen.
3. Run the monitor confidence test:
   - From the System toolchest, choose "Run Confidence Tests." You see the Confidence Tests form.
   - Select the *monitor* icon and click *Open,* or double-click the icon.
4. Click the mouse over the menu choice to run one of the tests from the menu to test monitor response.
5. To exit the confidence test, click *Quit*.

If the monitor tests indicate a failure, follow the instructions in "Ordering a Replacement Part" on page 134 to order a replacement part. Then contact your service provider for further instructions.

Mouse Confidence Test

If the buttons on your mouse do not work, or if the mouse is behaving erratically, follow the instructions in "Mouse Not Working or Erratic" on page 105, and then follow these steps:

1. Check that the mouse cable is firmly connected to the top connector (below the mouse icon) on the rear of the system.
2. Run the mouse confidence test:
   - From the System toolchest, choose "Run Confidence Tests." You see the Confidence Tests form.
   - Select the *mouse* icon and click *Open,* or double-click the icon.
3. Test the mouse by moving it around and pressing each mouse button. The mouse on the screen should respond as you move the mouse or press the mouse buttons.
4. Press the **<Esc>** key to quit the mouse test.

If the mouse is faulty, follow the instructions in "Ordering a Replacement Part" on page 134 to order a replacement mouse. Then contact your service provider for further instructions.

Indy Presenter Confidence Test

If you suspect a problem with your Indy Presenter, first try the troubleshooting suggestions in the *Indy Presenter Owner's Guide*. Then follow these steps:

1. Run the Presenter confidence test:
   - From the System toolchest, choose "Run Confidence Tests." You see the Confidence Tests form.
   - Select the *presenter* icon and click *Open,* or double-click the icon.
2. Follow the instructions on the screen to test the Presenter display, speakers, and adapter board.
3. To close the confidence test, press **<Esc>**.

Quarter-Inch Cartridge (QIC) Tape and Digital Audio Tape (DAT) Drives Confidence Test

If you suspect a problem with your tape drive, first try the suggestions in the section "External SCSI Device Not Working" on page 107, then follow these steps:

1. Run the appropriate tape drive confidence test:
   - From the System toolchest, choose "Run Confidence Tests." You see the Confidence Tests form.
   - Select the *tape* icon and click *Open*, or double-click the icon.
   - Select the icon for your tape drive.
2. Insert a blank tape, or one that has information you don't need, into the drive.

   Caution: The tape drive destroys any information on the tape in the process of testing the hardware.
3. Start the tape drive test by double-clicking the *Tape Drive* icon, or by clicking *Test*.

   When the test is complete, you see the tape drive test completion notifier.
4. Click *Continue* to dismiss the notifier.

If the test indicates the drive is faulty, follow the instructions in "Ordering a Replacement Part" on page 134 to order a replacement drive. Then contact your service provider for further instructions.

Recovering from a System Crash

If your system crashes because of a software malfunction, you must first use the IRIX CD that came with your system. Then you can recover your data from your most recent full backup tape. The backup tape must be one that has been made using the System Manager backup tool, or with the */usr/sbin/Backup* script.

To recover from a system crash, follow these steps:

1. If the system is malfunctioning and you cannot communicate with it using the mouse, or keyboard, or over the network, use a pencil or an unwound paper clip to press the **Reset** button located on the front panel, as shown in Figure 7-7.

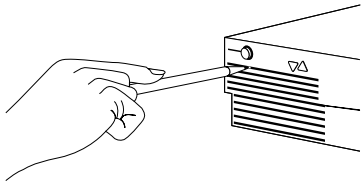

Figure 7-7 Pressing the Reset Button

2. When the system startup notifier appears, as shown in Figure 7-8, click *Stop for Maintenance* or press <**Esc**> to bring up the System Maintenance menu.

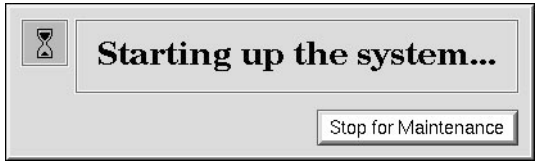

Figure 7-8 System Startup Notifier

3. Click the Recover System icon in the System Maintenance menu, or type:

   4

   Note: If you are using an ASCII terminal, type **4** at the System Maintenance menu.

The System Recovery menu appears, as shown in Figure 7-9.

Figure 7-9 System Recovery Menu

4. Click the appropriate drive icon from which you want to recover the software.

   For example, if you have a CD-ROM drive connected to your system, click the *Local CD-ROM* icon. Then click *Accept* to start.

   You then see the notifier shown in Figure 7-10, prompting you to insert the media into the drive.

Figure 7-10 Media Request Notifier

If you don't have a CD-ROM drive, you can use a drive that is connected to another system on the network. At the System Recovery menu, click the *Remote Directory* icon.

When a notifier appears asking you for the remote hostname, type the system's name, a colon (:), and the full pathname of the CD-ROM drive, followed by **/dist**. For example, to access a CD-ROM drive on the system *mars*, you would type:

```
mars:/CDROM/dist
```

5. Insert the IRIX CD that came with your system, then click *Continue*.

   The CD-ROM drive begins reading information from the CD. The system takes approximately 5 minutes to copy the information from the CD that it needs.

6. After everything is copied from the CD to the system disk, you can restore your data from a recent full backup tape. The backup must be one that has been made using the System Manager backup tool, or with the */usr/sbin/Backup* script.

   Note: If you need to check something on your system or do anything special, you can get a shell prompt by typing **sh** at most question prompts.

   You see the following messages.

   ```
   ****************************************

   SYSTEM RECOVERY

   ****************************************
   ```

7. If you have a local tape device, you see this message:

   ```
   Restore will be from <tapename> OK? ([Y]es, [N]o): [Y]
   ```

   tapename is the name of the local tape device.

8. If you have a remote (network) tape device, when no tape device is found, or when you answered "No" to the question in the previous bullet, you see this message:

   ```
   Remote or local restore ([r]emote, [l]ocal):
   ```

   - If you answer "remote," you have chosen to restore from the network, and you are then asked to enter the following information:
     - the hostname of the remote system
     - the name of the tape device on the remote system
     - the IP address of the remote system
     - the IP address of your system

   The IP address must consist of two to four numbers, separated by periods, such as 192.0.2.1

   - If you answer "local," you have chosen a tape device that is connected to your system, and you are then asked to enter the name of the tape device.

9. When you see the following message, remove the CD-ROM, insert your most recent full backup tape, then press <**Enter**>.

   ```
   Insert the first backup tape in the drive, then press <Enter>, [q]uit
   (from recovery), [r]estart:
   ```

10. There is a pause while the program retrieves several files from the tape describing the system state at the time the backup was made. Then you see this message:

    ```
    Erase /x filesystem and make new one (y,n)? [n]
    ```

    where *x* is the file system. It prompts you for every file system that was known at the time of the backup.

    Answer by typing either **y** or **n**.

    - If you answer no to this question, the system tries to salvage as many files as possible, then it uses your backup tape to replace the files it could not salvage. Usually you should answer **n** for no, especially if your backup tape is not very recent. If the file systems were badly damaged, or the backup was from a different level operating system, you may need to answer yes.
    - If you answer **y** for yes, the system erases the file system and copies everything from your backup tape to the disk. The system loses any information on that filesystem that you created between now and when you made your backup tape.

11. You see this message:

    ```
    Starting recovery from tape.
    ```

    After two or three minutes, the names of the files that the system is copying to the disk start scrolling. When the recovery is complete, you see this message:

    ```
    Recovery complete, restarting system.
    ```

    Then the system restarts.

    When you see the login screen, the system is ready to go.

Note: If your backup tapes were old, or you were changing your operating system level, you should reinstall the operating system from the IRIX CD that came with your system after system recovery is complete. When you see the "Starting up the system" notifier, press **<Esc>**, or click on *Stop for Maintenance*. Then click the *Install System Software* icon. For more information on installing the operating system, go to Chapter 6, "Installing and Removing Software."

Disabling the System Maintenance Password

If you are in the System Maintenance menu, and you choose the "Install System Software," "Run Diagnostics," "Recover System," or "Enter Command Monitor" icon, you may be prompted for a password, as shown in Figure 7-11.

Figure 7-11 Enter Password Prompt

If you do not know the password, you can disable it by removing a jumper (a small, cap that connect two pins) from the system board inside the workstation.

Note: To prevent unauthorized access to the jumper on the system board, you can lock the cover of your Indy workstation. For more information, go to "Locking the Top Cover" on page 39.

To remove the jumper and disable the password, follow these steps:

1. Shut down the system.
   - Press and release the power button to power off the system.
   - Disconnect the power cable from the rear of the workstation.
2. Remove the cover by releasing the latch on the rear of the cover and sliding the cover forward. For more details, see "Removing the Top Cover" on page 36.
3. Locate the jumper beside the power supply cable connectors on the system board, as shown in Figure 7-12.

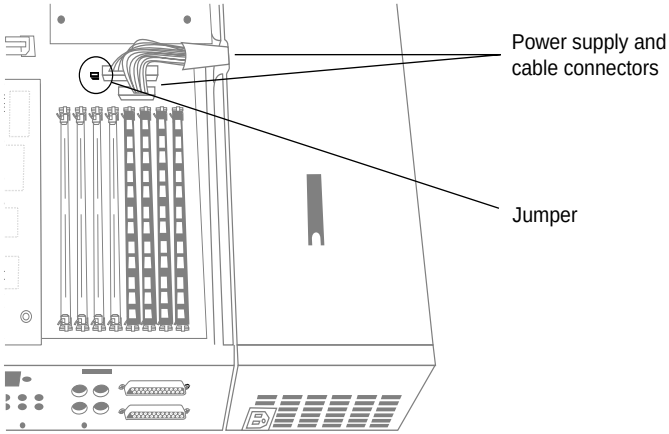

Figure 7-12 Locating the Password Jumper

4. Remove the jumper and save it. You must reinstall it if you choose to reset the password.
5. Replace the cover by inserting the tab through the hole in the rear of the chassis and sliding the cover back until it snaps into place.
6. Reconnect the power cable to the rear of the system.
7. Press and release the power button on the front of the system to power on the system.

When you return to the System Maintenance menu and choose one of the four icons mentioned before, you see the notifier shown in Figure 7-13.

Figure 7-13 Disabled Password Notifier

If you want to reenable the password, you can do so by entering the Command Monitor and giving the command *resetpw* to clear the password. Then power the system down, remove the top cover, and replace the jumper. Replace the top cover and power on the system.

Finding Your Workstation's Serial Number

From time to time you may need to know your workstation's serial number. For example, to get licenses for software applications it is often required. There are two ways you can find it.

1. Look on the back panel of the Indy. Next to the power connector, you'll see a label with a bar code and the serial number. See Figure 7-14.
2. Or, if your system is running, from a shell window, type:

   ```
   netstat ia
   ```

   The serial number is the one beginning with the numbers `08`.

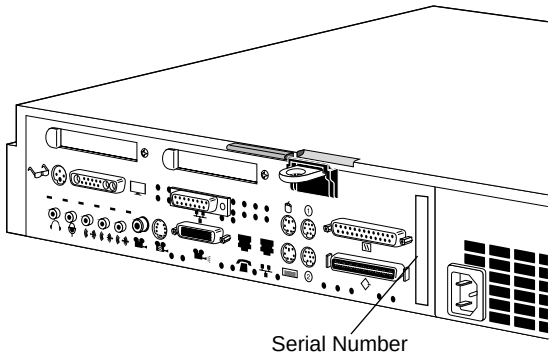

Figure 7-14 Finding Your Workstation's Serial Number

Service and Support Information

When you purchased your system, you may have purchased a support program from either Silicon Graphics or a vendor who supplies software. Whenever you encounter any problems that you cannot solve using the methods in this chapter, contact the organization from which you purchased the support program.

If you would like support for your Silicon Graphics-supported products, contact your service provider.

Chapter 8

Ordering, Removing, and Installing Replacement Parts

This chapter describes how to remove and replace parts in your Indy workstation. It also explains how to return the part or the system to your service provider.

Ordering, Removing, and Installing Replacement Parts

This system is designed to be user maintainable. If diagnostic tests identify a faulty part, contact your service organization before removing the faulty part. In some cases you may be instructed to return the system.

This chapter tells you how to:

- order a replacement part and package the faulty part for return
- replace the system
- replace the following internal parts
  - GIO option board (optional video, network or fast SCSI-2 boards)
  - graphics board
  - CPU module
  - SIMMs (Single Inline Memory Modules)
  - internal drives (floptical, second hard disk and system disk)
  - power supply
  - external SCSI (Small Computer Systems Interface) devices

Ordering a Replacement Part

If diagnostics have identified a faulty part, call your service provider. You will be instructed either to order a replacement part, or to ship the system back. If instructed to return the system, go to "Replacing the System" on page 136. If asked to return the part, Figure 8-1 will help you locate the part number of the faulty part.

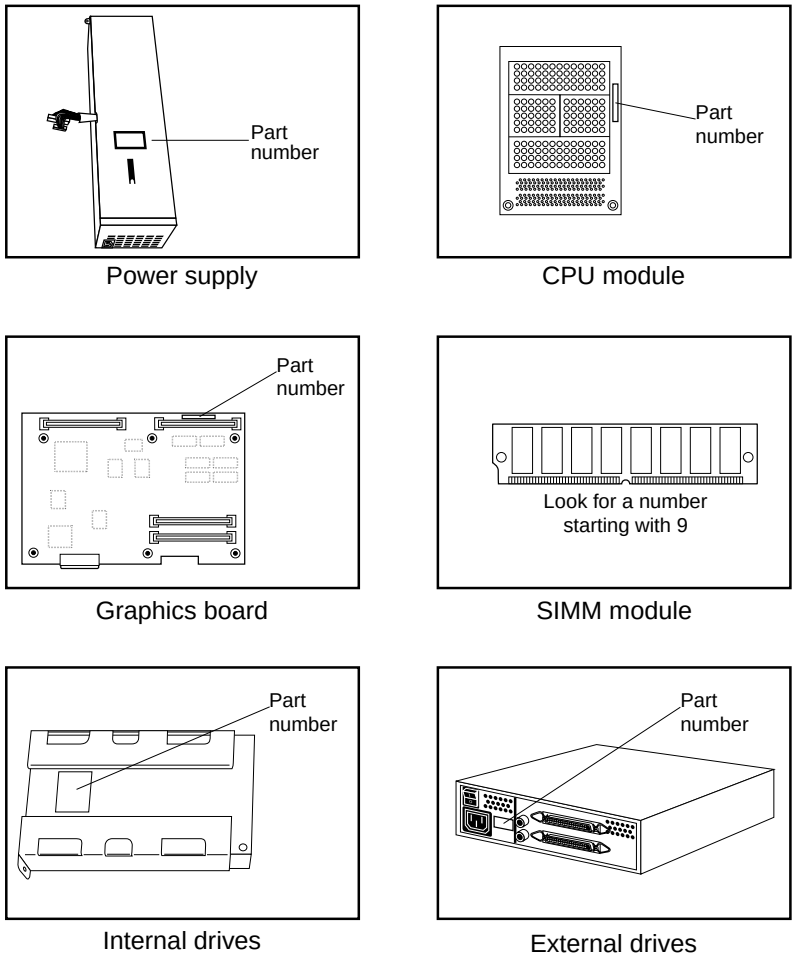

Figure 8-1 Part Number Locations

Follow these steps to order a replacement part:

1. Contact your service provider.

   You will be asked for the system serial number, configuration information, the faulty part's part number, and a description of the problem. You may be instructed to remove the faulty part, or you may be asked to return the entire system.

2. Make a photocopy of the "Part Request Form" at the back of this guide.
3. Note the name of the faulty part on the copy of the form.
4. Note the serial number of your system. The number is on a label on the back of the system.
5. Remove the faulty part if instructed to do so. Go to the appropriate instructions on replacing parts in this chapter.
6. Look for the part number of the faulty part; it's shown on the part. (Refer to Figure 8-1.)
7. Pack and ship the faulty part to your service provider:

   - If possible, package the part in an antistatic bag. Graphics and GIO option boards, CPU modules, and SIMM modules are extremely sensitive to static electricity.
   - For maximum protection to the part, use two sturdy boxes for shipping.

     Place the faulty part and "Part Request Form" into one of the two boxes. Pack them in plenty of packing material so the part won't sustain further damage. Tape the box securely.

     Place the box containing the faulty part into a larger box and fill the empty space with packing materials. Tape the box securely and affix a mailing label. Ship the box to your service provider.

Replacing the System

If diagnostics have identified a problem with the system, call your service provider. If instructed to return the system, follow these instructions to prepare it for shipping and complete the necessary paperwork.

1. To preserve your data, remove the disk drives from the system:
   - Remove the floptical disk drive or second hard disk drive in the top drive slot (if installed). Go to "Replacing the Internal Floptical Drive or Second Hard Disk Drive" on page 158.
   - Remove the system disk drive. Go to "Replacing the System Drive" on page 160.
2. Remove any non-Silicon Graphics memory modules or other non-Silicon Graphics parts installed on the system. Refer to the appropriate section in this chapter to remove the parts.
3. Remove any external SCSI devices or external parts such as the keyboard, mouse, camera, or monitor. Do not ship these external parts unless told to do so by your service provider.
4. Make a photocopy of the "Part Request Form" on the last page of this guide.
5. Complete the "Part Request Form." You need to know the serial number of your system. The number is on a label on the back of the system. The serial number allows your service provider to identify the correct replacement system for you.
6. Pack the workstation in the original packing materials that came with it. The workstation should include all the internal parts (except for the system drive) that it shipped with: power supply, system board, CPU module, graphics board, and memory modules.

   Note: It's important that you use the original packing materials to prevent further damage to the workstation and its internal parts. If you don't have the original packing materials, contact your service provider.
7. Ship the workstation to your service provider.

Replacing Internal Parts

Internal replacement parts include the graphics board, GIO option board, CPU module, SIMM modules, internal drives, and power supply.

Note: Before replacing an internal part, call your service provider for instructions. If the system is under warranty, you may be instructed to ship the system back.

Follow the steps below to shut down the system, remove the cover, attach the wrist strap, replace the part, replace the cover, and start up the system.

Replacing a GIO Option Board

For non-Silicon Graphics GIO option boards, contact the supplier for maintenance instructions.

To replace a single-width or double-width GIO option board, follow these steps:

1. If the system is powered on, press and release the power button on the front of the system to shut down the software and power off the system.

   The system powers off automatically after about a minute.

2. Disconnect the power cable from the back of the Indy workstation.
3. Remove the top cover by releasing the latch on the rear of the cover and sliding it forward. For more details, see "Removing the Top Cover" on page 36.
4. Ground yourself to a metal part of the Indy chassis.
   - Unwrap the first two folds of the wrist strap and wrap the exposed adhesive side firmly around your wrist.
   - Unroll the rest of the band and peel the liner from the copper foil at the opposite end.
   - Attach the copper foil to a metal part of the Indy chassis.

   Caution: The GIO option board is extremely sensitive to static electricity. Wearing the wrist strap prevents the discharge of static electricity, which could damage the board.

5. Move the system or position yourself so that you are facing the rear of the system as shown in Figure 8-2.

   GIO option boards are installed on top of the graphics board. A single-width GIO option board covers half of the graphics board; a double-width covers the entire graphics board. Figure 8-2 shows a single-width board.

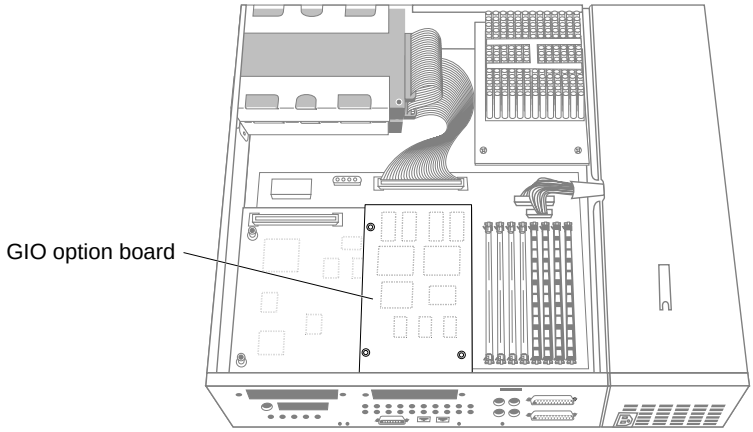

Figure 8-2 Locating the GIO Option Board

6. If there are external cables connected to the GIO board connector on the rear of the workstation, disconnect them.

7. Using the tool provided with the replacement GIO board, remove the screws from GIO board connector on the rear of the workstation. Figure 8-3 shows the screw locations for a single-width board; Figure 8-4 shows the screw locations for a double-width board.

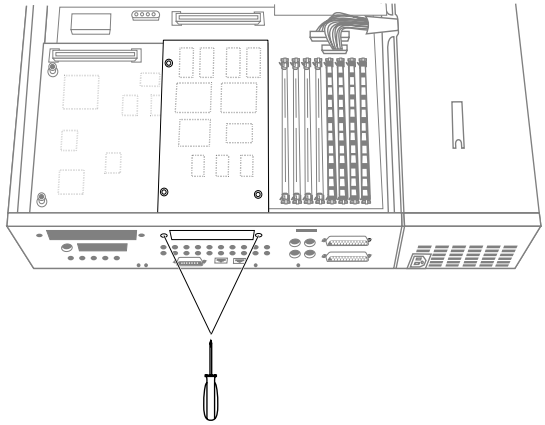

Figure 8-3 Removing the External Screws From a Single-Width Board

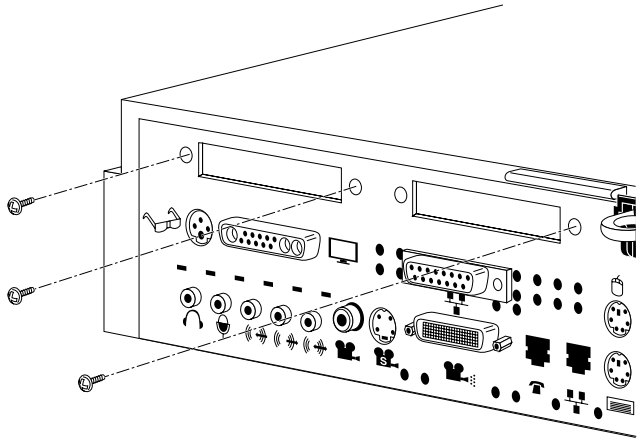

Figure 8-4 Removing the External Screws From a Double-Width Board

8. Using a phillips screwdriver, remove the screws that connect the GIO option board to the graphics board. Figure 8-5 shows a single-width board. Figure 8-6 shows a double-width board.

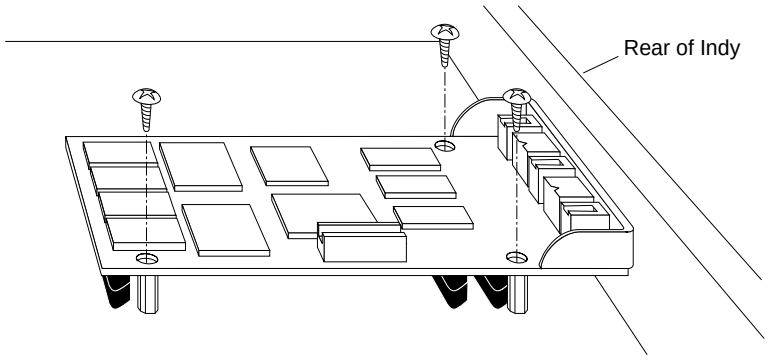

Figure 8-5 Removing the Screws From a Single-Width GIO Option Board

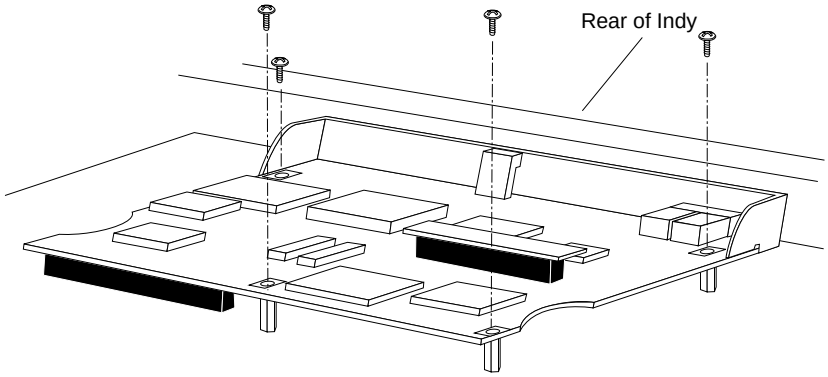

Figure 8-6 Removing the Screws From a Double-Width GIO Option Board

9. Disconnect the GIO board from the graphics board by grasping the GIO board firmly on the side close to the system disk drive and pulling it up.

10. Install the replacement GIO option board.

    To install the new board, follow the instructions in “Installing a GIO Option Board” on page 53.

Replacing the Graphics Board

Note: If your system has an XZ graphics boardset, do not follow these instructions. Go to “Replacing the XZ Graphics Boardset” on page 147.

To replace the graphics board, you first need to remove any GIO option boards installed on it. Follow these steps:

1. If the system is powered on, press and release the power button on the front of the system to shut down the software and power off the system.

   The system powers off automatically after about a minute.

2. Disconnect the power cable from the back of the Indy workstation.
3. Remove the top cover by releasing the latch on the rear of the cover and sliding it forward. For more details, see “Removing the Top Cover” on page 36.
4. Ground yourself to a metal part of the Indy chassis.
   - Unwrap the first two folds of the wrist strap and wrap the exposed adhesive side firmly around your wrist.
   - Unroll the rest of the band and peel the liner from the copper foil at the opposite end.
   - Attach the copper foil to a metal part of the Indy chassis.

Caution: The graphics board is extremely sensitive to static electricity. Wearing the wrist strap prevents the discharge of static electricity, which could damage the board.

5. Move the system or position yourself so that you are facing the rear of the system, as shown in Figure 8-7.

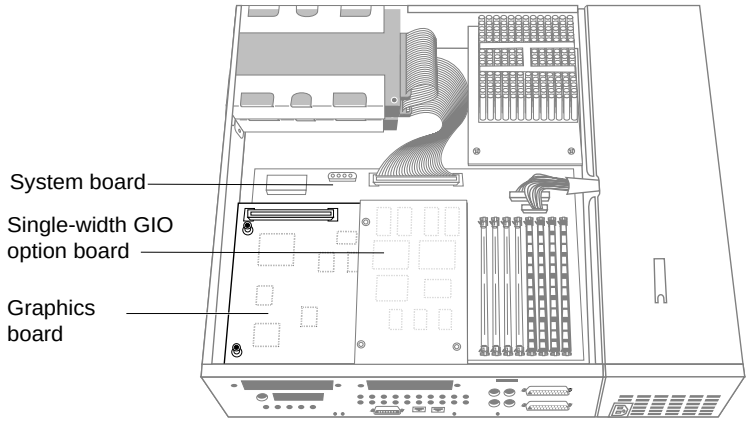

Figure 8-7 Locating the Graphics Board with GIO Option Board Installed

6. To gain access to the graphics board, remove any GIO option boards, if installed.

   There might be one double-width GIO option board, or one single-width board, or two single-width boards installed on the graphics board. Figure 8-7 shows one single-width GIO option board installed.

   Refer to "Replacing a GIO Option Board" on page 137 for instructions on removing the board, and then continue with the next step.

7. Use the end of the tool that has an icon (provided with the replacement graphics board) to unscrew the two hexnuts on either side of the graphics board's I/O connector on the rear of the workstation, as shown in Figure 8-8.

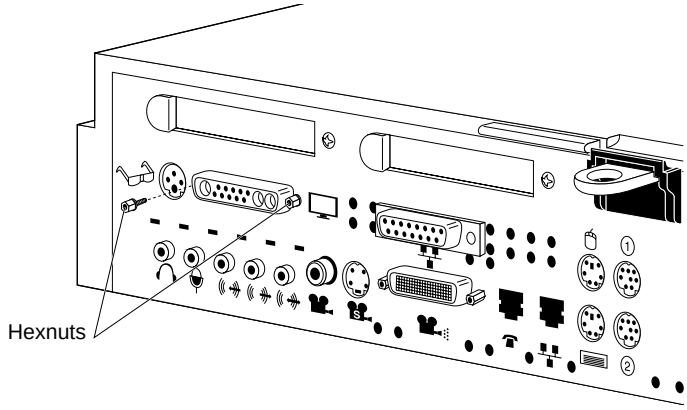

Figure 8-8 Removing the Screws From the Graphics Board's I/O Connector

8. Use the end of the tool without an icon to unscrew the two standoff screws (tall, hexagonal posts) from the graphics board, as shown in Figure 8-9.
9. Use a phillips screwdriver to remove one Phillips screw from the graphics board.

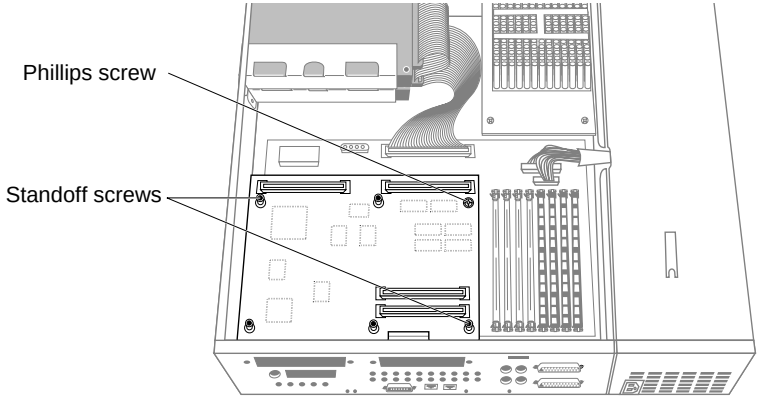

Figure 8-9 Removing the Screws From the Graphics Board

10. Disconnect the graphics board from the system board, as shown in Figure 8-10.
    - Grasp the board firmly on the side close to the system disk drive and pull up to disconnect the two connectors under the graphics board from the sockets on the system board.
    - Lift the graphics board up and remove it.

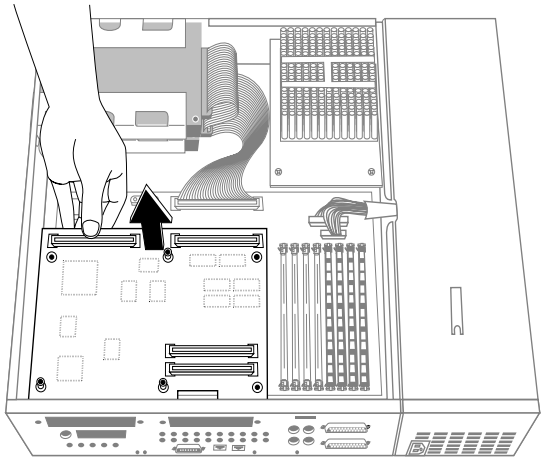

Figure 8-10 Disconnecting the Graphics Board From the System Board

11. Lower the replacement graphics board over the system board, tilting it to insert the graphics board's I/O connector through the open I/O slot on the rear of the chassis.

12. Align the screw holes on the graphics board over the vacant standoff screws (tall, hexagonal posts) on the system board.
13. Connect the graphics board to the system board, as shown in Figure 8-11.
    - Seat the connectors under the graphics board over the sockets on the system board. Make sure they are positioned correctly before going on to the next step.
    - Press down firmly on all four corners of the graphics board until it is securely seated in the two sockets on the system board. If the board is not seated all the way, the screws will not tighten correctly.

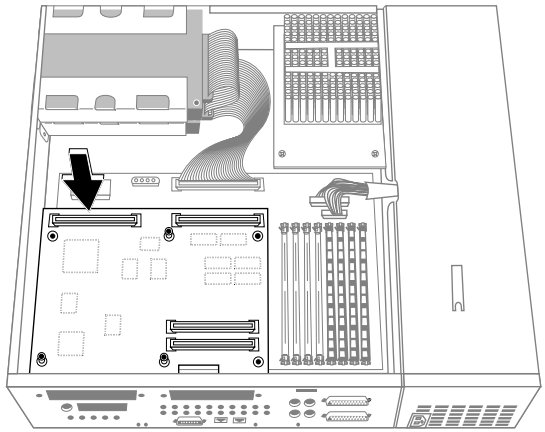

Figure 8-11 Connecting the Graphics Board to the System Board

14. Use the end of the tool without an icon to insert and tighten the two standoff screws that you removed earlier on the graphics board, as shown in . As you tighten the screws, alternate between them so that the board is connected evenly.
15. Insert and tighten the phillips screw that you removed earlier on the graphics board.

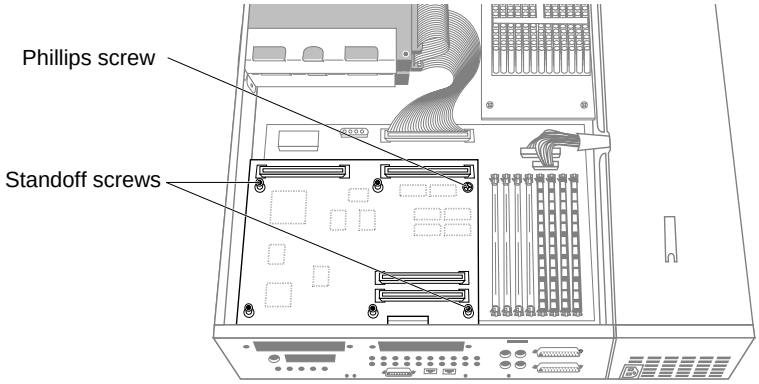

Figure 8-12 Inserting the Screws on the Graphics Board

16. Use the end of the tool that has an icon, to insert and tighten the two hexnut screws on either side of the graphics board's I/O connector on the rear of the chassis, as shown in . You removed these two screws earlier.

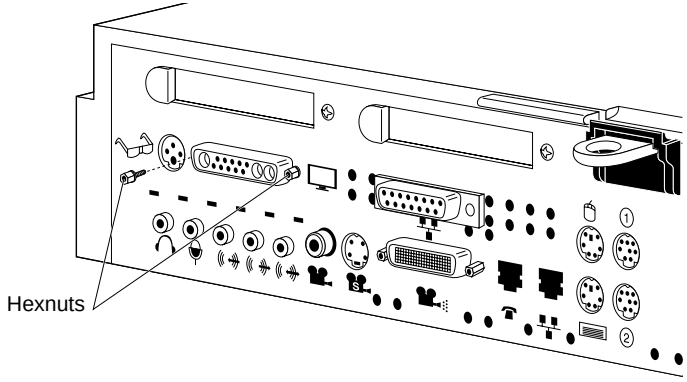

Figure 8-13 Replacing the Screws on the Graphics Board's I/O Connector

17. If you removed any GIO option boards, re-install them. Refer to"Installing a GIO Option Board" on page 53.
18. Replace the top cover by inserting the tab through the hole in the rear of the chassis and sliding it back until it snaps into place. For more information, see "Replacing the Top Cover" on page 38.
19. Reconnect the power cable to the connector on the back of the Indy workstation.

You are finished replacing the graphics board and ready to power on the system.

Replacing the XZ Graphics Boardset

To replace the XZ graphics boardset, follow the steps below.

Note: If you have an Indy Presenter XZ adapter board installed in your Indy, you must first remove it, before removing the XZ graphics boardset. Refer to the *Indy Presenter Owner's Guide* for instructions.

1. If the system is powered on, press and release the power button on the front of the system to shut down the software and power off the system.

   The system powers off automatically after about a minute.
2. Disconnect the power cable from the back of the Indy workstation.
3. Remove the top cover by releasing the latch on the rear of the cover and sliding it forward. For more details, see "Removing the Top Cover" on page 36.
4. Ground yourself to a metal part of the Indy chassis.
   - Unwrap the first two folds of the wrist strap and wrap the exposed adhesive side firmly around your wrist.
   - Unroll the rest of the band and peel the liner from the copper foil at the opposite end.
   - Attach the copper foil to a metal part of the Indy chassis.

Caution: The graphics boardset is extremely sensitive to static electricity. Wearing the wrist strap prevents the discharge of static electricity, which could damage the boards.

5. The XZ graphics boardset consists of two boards, the X board and the Z board, which are installed on top of each other. Using a Phillips screwdriver, remove the screws securing the X board to the Z board, as shown in Figure 8-14.

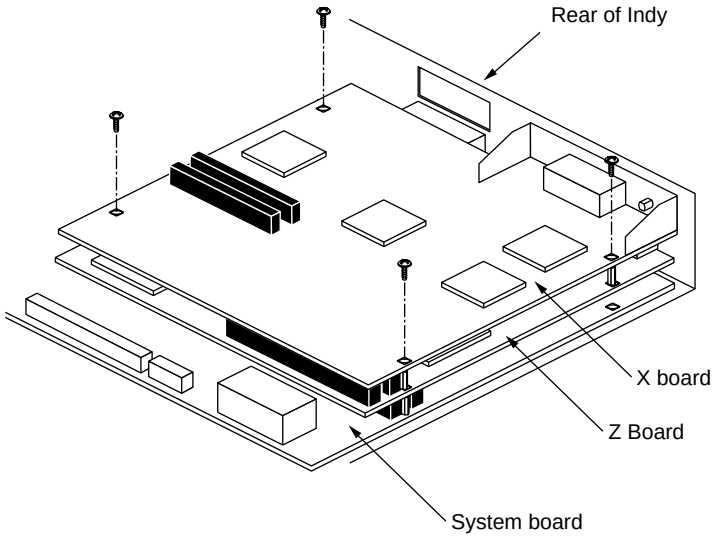

Figure 8-14 Removing the Screws From the X Board

6. On the rear of the workstation, remove the two screws in the locations shown in Figure 8-15.

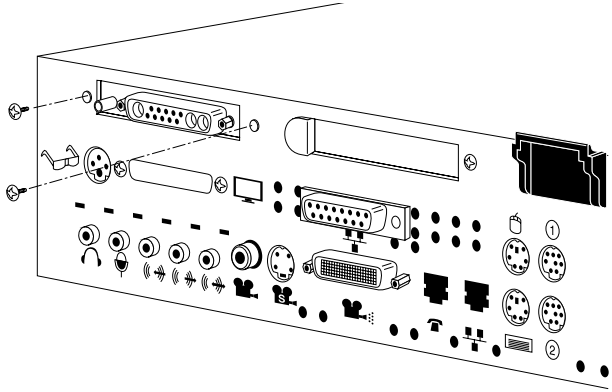

Figure 8-15 Removing the Exterior Screws for the X Board

7. Disconnect the X board from the Z board, by grasping the board firmly on the side close to the system disk drive and pulling up to disconnect the two connectors underneath the board. See Figure 8-16.

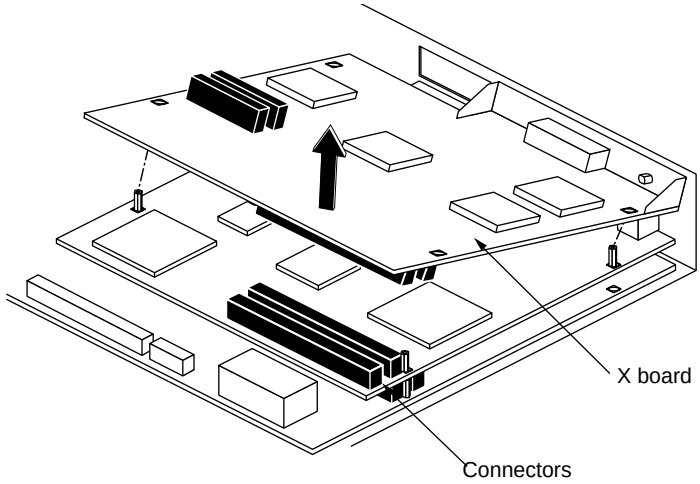

Figure 8-16 Disconnecting the X Board from the Z Board

8. Using an open-ended wrench, remove the standoff screws from the Z board, as shown in Figure 8-17.

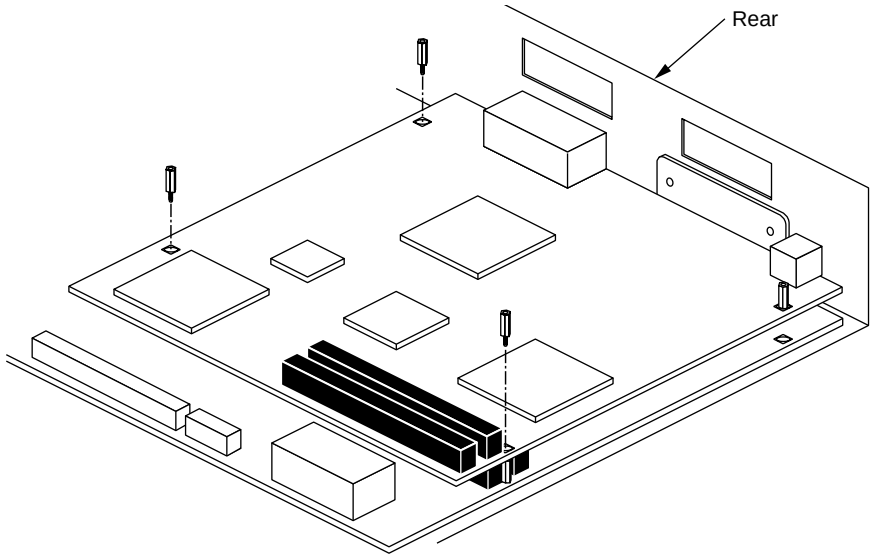

Figure 8-17 Removing the Standoff Screws From the Z Board

9. On the rear of the workstation, remove the two screws, as shown in Figure 8-18.

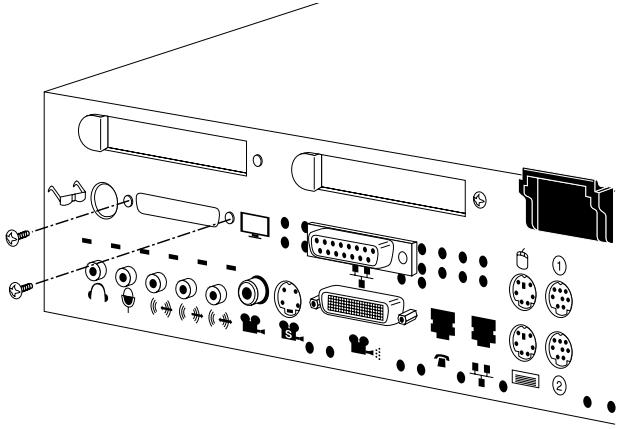

Figure 8-18 Removing the Exterior Screws For the Z Board

10. Disconnect the Z board from the system board, by grasping the board firmly on the side close to the system disk drive and pulling up to disconnect the two connectors underneath the board. See Figure 8-19.

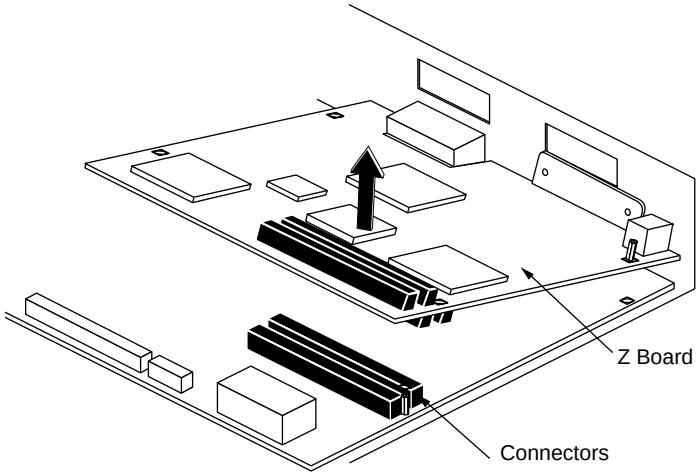

Figure 8-19 Disconnecting the Z Board From the System Board

11. Install the replacement XZ boardset, using the instructions for removing the boardset in reverse order. That is, install the Z board first on the system board. Then install the X board on top of the Z board.
12. If you removed an Indy Presenter XZ adapter board, re-install it., referring to the instructions in the *Indy Presenter Owner's Guide*.
13. Replace Indy's top cover by inserting the tab through the hole in the rear of the chassis and sliding it back until it snaps into place. For more information, see "Replacing the Top Cover" on page 38.
14. Reconnect the power cable to the connector on the back of the Indy workstation.
15. You are finished replacing the XZ graphics boardset and ready to power on the system.

Replacing the CPU module

Follow the steps below to remove the CPU module and install the new CPU module.

1. If the system is powered on, press and release the power button on the front of the system to shut down the software and power off the system.

   The system powers off automatically after about a minute.

2. Disconnect the power cable from the back of the Indy workstation.
3. Remove the top cover by releasing the latch on the rear of the cover and sliding it forward. For more details, see "Removing the Top Cover" on page 36.
4. Ground yourself to a metal part of the Indy chassis.
   - Unwrap the first two folds of the wrist strap and wrap the exposed adhesive side firmly around your wrist.
   - Unroll the rest of the band and peel the liner from the copper foil at the opposite end.
   - Attach the copper foil to a metal part of the Indy chassis.

Caution: The CPU module is extremely sensitive to static electricity. Wearing the wrist strap prevents the discharge of static electricity, which could damage the board.

5. Locate the CPU module, as shown in Figure 8-20.

   The CPU module is elevated on the system board and is located at the front of the system between the power supply and the system disk drive. It is protected by a textured heat sink. *Do not remove the heat sink*.

   Note: The Indy workstation supports several CPU module shapes. Your system may have a CPU module and heat sink that look different than the one shown below.

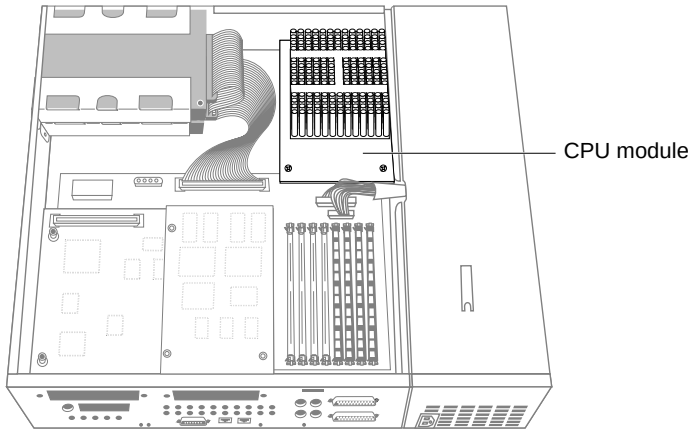

Figure 8-20 Locating the CPU Module

6. Using a Phillips screwdriver, remove the two screws that connect the CPU module to the system board, as shown in Figure 8-21.

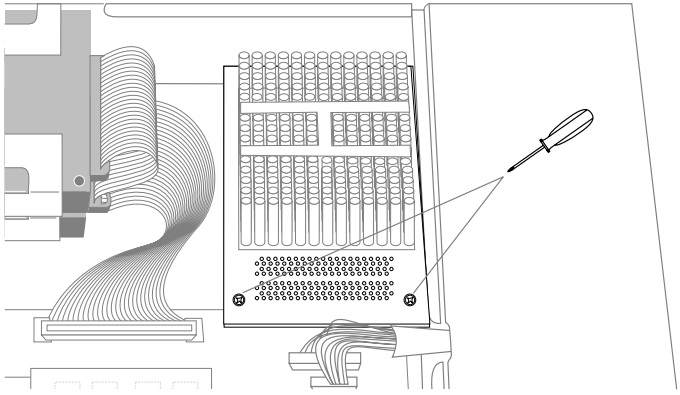

Figure 8-21 Removing the Two Screws From the CPU Module

7. Lift the board by bracing your hands against the power supply and the chassis and pushing the board up with your thumbs, as shown in Figure 8-22.

   Note: *Note that when the board disconnects, it pops up quite quickly and may startle you.*

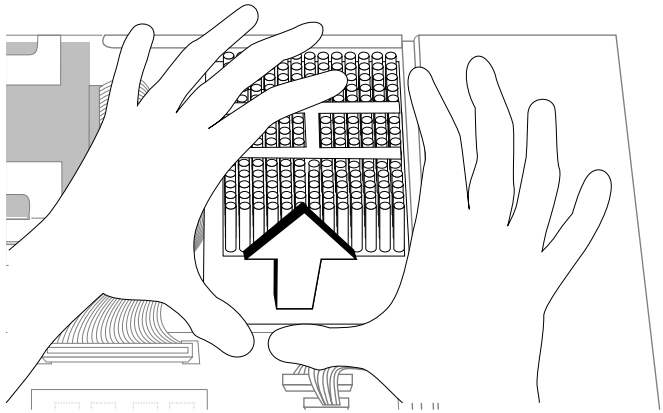

Figure 8-22 Disconnecting the CPU Module

8. Install the replacement CPU module, as shown in Figure 8-23.
   - Slide the feet on the bottom of the CPU module into the slippers on the base of the chassis.
   - Align the two screw holes on the CPU module over the screw holes on the system board.
   - Seat the connector under the CPU module over the connector on the system board. Make sure it is positioned correctly before going on to the next step.
   - Press down firmly on the CPU module until it is securely seated in the socket on the system board.

     If the connector does not seem to fit into the socket, do not force it. Lift the end of the CPU module slightly and lower it again, making sure it's seated correctly over the connector before pressing it all the way down.

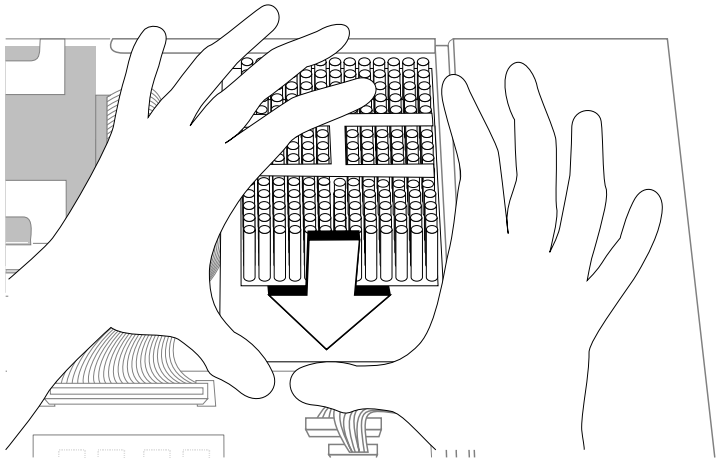

Figure 8-23 Installing the CPU Module

9. Insert and tighten the two screws you removed earlier to connect the CPU module to the system board. As you tighten the screws, alternate from one to the other so that the board is connected evenly.
10. Replace the top cover by inserting the tab through the hole in the rear of the chassis and sliding it back until it snaps into place. For more information, see "Replacing the Top Cover" on page 38.
11. Reconnect the power cable to the connector on the back of the Indy workstation.

You are finished replacing the CPU module and ready to power on the system.

Replacing SIMMs

You may need to remove and replace SIMMs (single in-line memory modules) if one fails or if you want to upgrade the memory in your system.

Follow these steps to shut down the system, remove the cover, remove the SIMMs, and replace the cover.

1. If the system is powered on, press and release the power button on the front of the system to shut down the software and power off the system.

   The system powers off automatically after about one minute.

2. Disconnect the power cable from the back of the Indy workstation.
3. Remove the top cover by releasing the latch on the rear of the cover and sliding it forward. For more details, see "Removing the Top Cover" on page 36.
4. Ground yourself to a metal part of the chassis.
   - Unwrap the first two folds of the wrist strap and wrap the exposed adhesive side firmly around your wrist.
   - Unroll the rest of the band and peel the liner from the copper foil at the opposite end.
   - Attach the copper foil to a metal part of the Indy chassis.

Caution: SIMMs and the system's internal components are sensitive to static electricity. Handle the SIMMs carefully, and wear the wrist strap to avoid discharging static electricity.

5. Move the system or position yourself so that you are facing the power supply, as shown in Figure 8-24.
6. Locate the SIMMS between the power supply and the graphics board.There are eight SIMM sockets, split into two banks—0 and 1. Bank 0 is closer to the power supply and contains sockets S1 through S4. Bank 1 is closer to the graphics board and contains sockets S5 through S8.

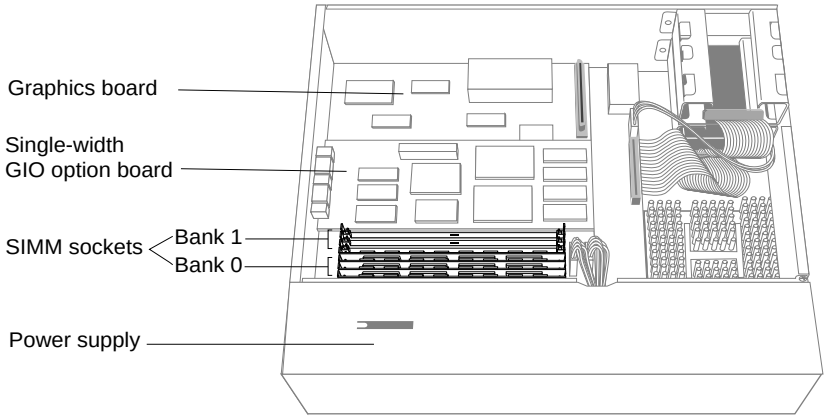

Figure 8-24 Locating the Memory SIMMs

7. Locate the memory SIMMs you want to remove. In order to replace a faulty SIMM, you need to remove the SIMM farthest from you first (closest to the graphics board), then remove the other SIMMs until you reach the SIMM you want to replace.
8. With your thumbs, pull the latches away from the SIMM, as shown in Figure 8-25.

   The SIMM releases and tips away from you about 45 degrees.

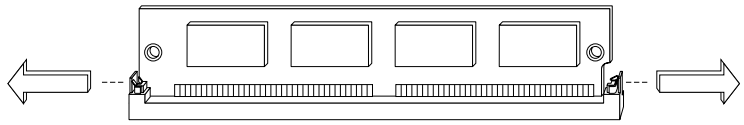

Figure 8-25 Releasing the Latches on the SIMM

Note: Some GIO option boards, if installed on the side of the graphics board close to the SIMMs as shown in Figure 8-26, may impede your installation of the SIMM in the last socket of bank 1 (closest to the graphics board). If this is the case, you may have to remove the GIO option board to gain access to the SIMM socket. Turn to"Replacing a GIO Option Board" on page 137 for instructions and then return to this section.

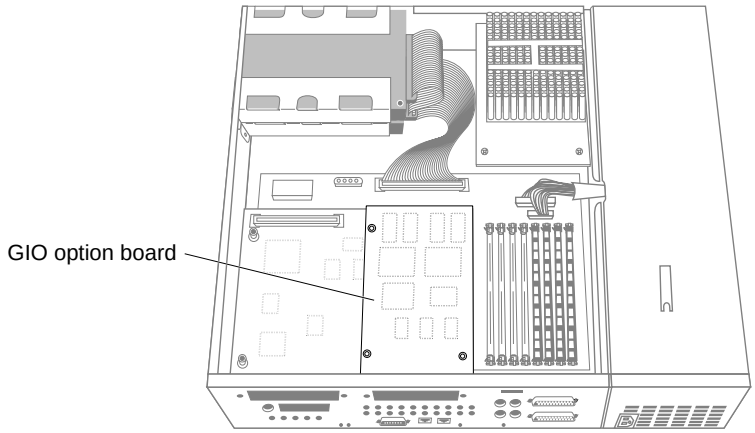

Figure 8-26 The GIO board Installed on the Right Side of the Graphics Board

9. Remove the other SIMMs the same way.
10. Install the replacement SIMMs. To install the SIMMs, turn to "Installing SIMMs" on page 43.

Replacing the Internal Floptical Drive or Second Hard Disk Drive

To remove the internal floptical or second hard disk drive from the top drive slot, follow these steps:

1. If the system is powered on, press and release the power button on the front of the system to shut down the software and power off the system.

   The system powers off automatically after about a minute.

2. Disconnect the power cable from the back of the Indy workstation.
3. Remove the top cover by releasing the latch on the rear of the cover and sliding it forward. For more details, see "Removing the Top Cover" on page 36.
4. Ground yourself to a metal part of the Indy chassis.
   - Unwrap the first two folds of the wrist strap and wrap the exposed adhesive side firmly around your wrist.
   - Unroll the rest of the band and peel the liner from the copper foil at the opposite end.
   - Attach the copper foil to a metal part of the Indy chassis.
5. Locate the floptical or second hard drive, as shown in Figure 8-27.

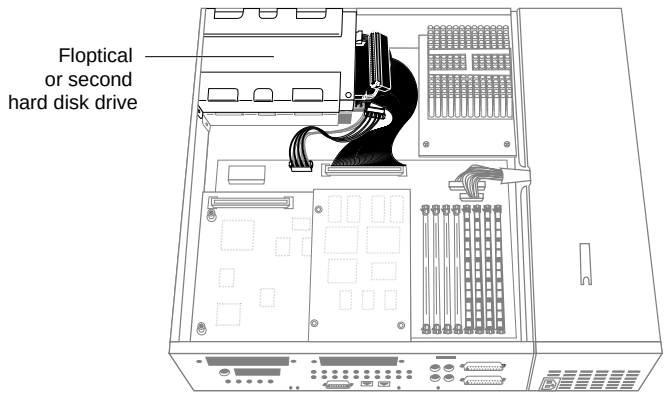

Figure 8-27 Locating the Floptical or Second Hard Disk Drive

6. Remove the drive and bracket by pressing the release button that protrudes through the hole on the side of the chassis, and pulling the unit toward you, as shown in Figure 8-28.

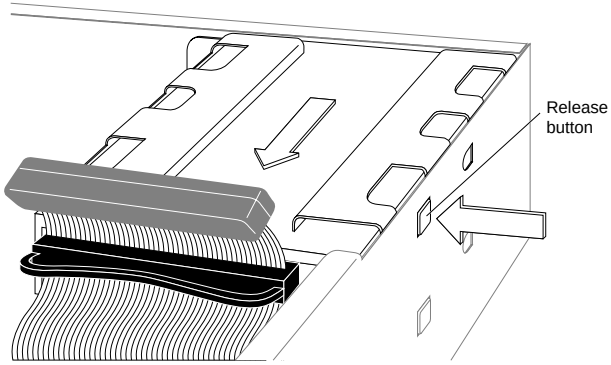

Figure 8-28 Removing the Floptical Drive

7. Disconnect the following cables:
   - Disconnect the power cable connector from the drive, as shown in Figure 8-29.
   - Disconnect the SCSI ribbon cable connector from the drive. You can pull the plastic loop behind the connector to help you disconnect the cable.

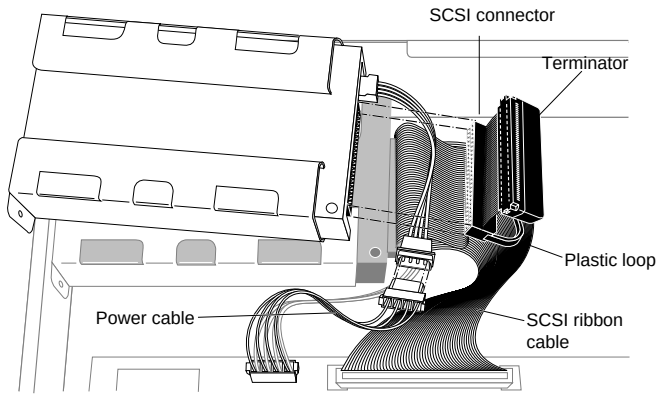

Figure 8-29 Disconnecting the Power and SCSI Cables From the Floptical Drive

8. Install the replacement drive.

   To install the new drive, follow the instructions in "Installing the Drive" on page 63, starting with step 7.

Note: If you remove the floptical or secondary hard disk drive and do not intend to replace it, you need to inform the system that the drive is no longer there. For more information, select "Online Books" from the Help toolchest, and search for "Removing a Disk" in the *Personal System Administration Guide*.

Replacing the System Drive

To replace the system drive, you must first remove the drive and bracket, or the empty bracket if no drive is installed, from the upper drive slot. The drive could be a floptical drive or second hard disk drive.

1. If the system is powered on, press and release the power button on the front of the system to shut down the software and power off the system.

   The system powers off automatically after about a minute.

2. Disconnect the power cable from the back of the Indy workstation.
3. Remove the top cover by releasing the latch on the rear of the cover and sliding it forward. For more details, see "Removing the Top Cover" on page 36.
4. Ground yourself to a metal part of the Indy chassis.
   - Unwrap the first two folds of the wrist strap and wrap the exposed adhesive side firmly around your wrist.
   - Unroll the rest of the band and peel the liner from the copper foil at the opposite end.
   - Attach the copper foil to a metal part of the Indy chassis.

5. Locate the floptical drive (if installed) in the top drive slot, as shown in Figure 8-30 . (This might also be a second hard disk drive.)

   If no drive is installed, there will be an empty bracket.

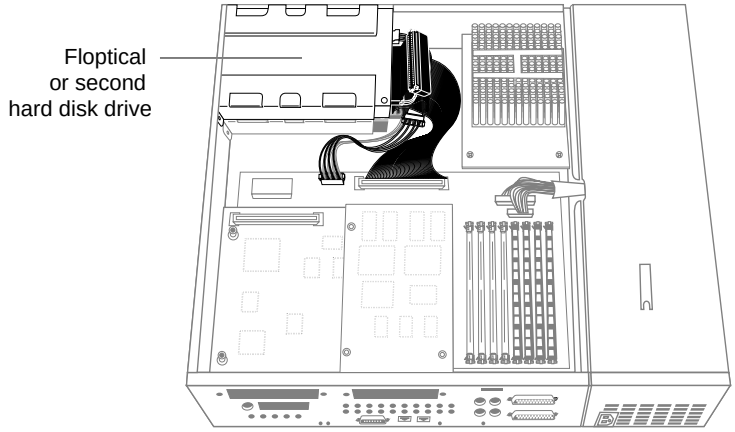

Figure 8-30 Locating the Floptical Drive Installed in the Top Slot

6. Remove the floptical drive and bracket, (or the empty bracket if no drive is installed), by pressing the release button that protrudes through the hole in the side of the chassis and pulling the unit toward you. (See Figure 8-31.)

   If you are not replacing a drive in the top slot, you must re-install the empty bracket in the top slot after replacing the system disk drive.

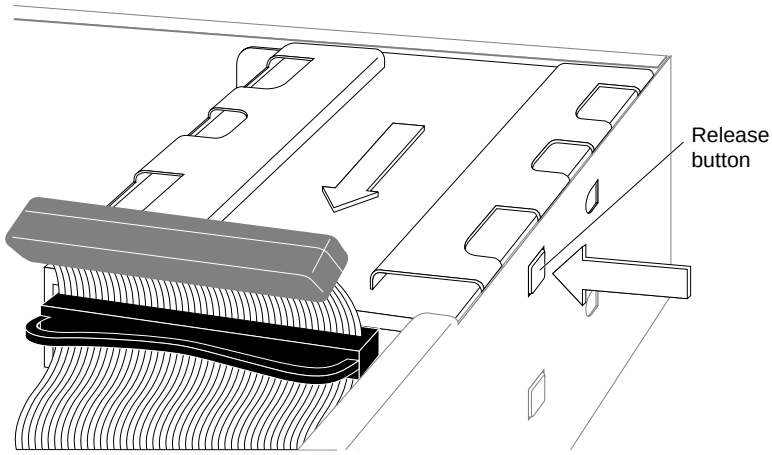

Figure 8-31 Removing the Floptical Drive and Bracket

Caution: The empty drive bracket provides support for the monitor that sits on top of the system. You must replace it if you're not installing a drive in the top slot.

7. Disconnect the following cables.
   - Disconnect the power cable connector from the drive, as shown in Figure 8-32.
   - Disconnect the SCSI ribbon cable connector from the drive.There's a plastic loop on the back of the connector which you can pull to help you disconnect the cable.

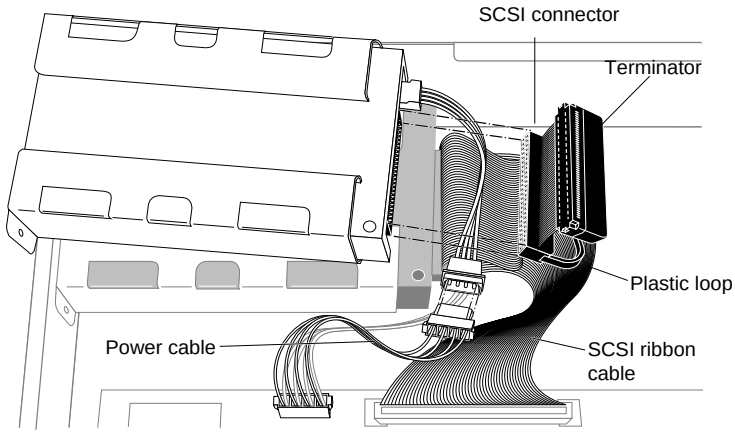

Figure 8-32 Disconnecting the Cables From the Floptical Disk Drive

8. Remove the system drive and bracket from the lower drive slot by pressing the release button that protrudes through the hole on the side of the chassis and pulling the unit toward you, as shown in Figure 8-33.

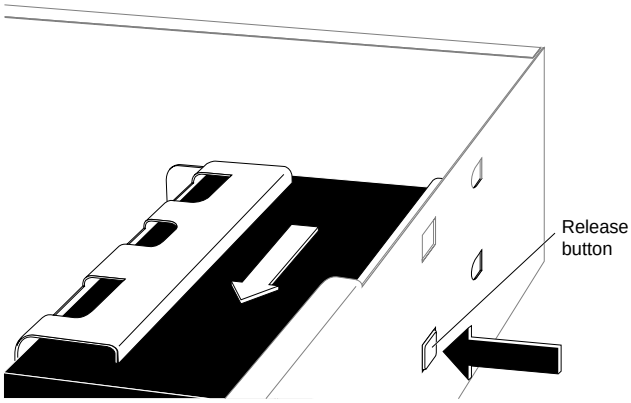

Figure 8-33 Removing the System Disk Drive

9. Disconnect the following cables:
   - Disconnect the power cable connector from the system drive, as shown in Figure 8-34.
   - Disconnect the SCSI ribbon cable connector from the drive. You can pull on the plastic loop behind the connector to help you disconnect it.

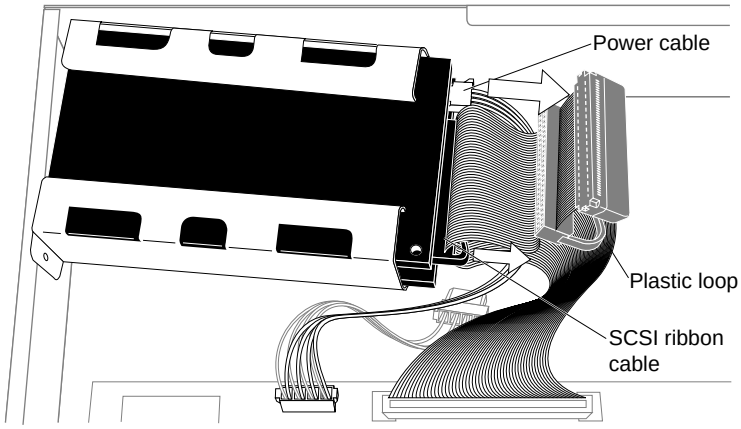

Figure 8-34 Disconnecting the Power and SCSI Cables From the System Disk Drive

10. Pick up the replacement system drive and reconnect the SCSI cable and the power cable to the replacement system drive.

11. Install the replacement system drive, as shown in Figure 8-35.
    - Lower the drive and bracket onto the chassis, making sure it engages in the metal tab on the floor of the chassis. At the same time the button on the right side of the bracket snaps into the hole on the side of the chassis.
    - If you don't hear it snap, push the bracket forward until you hear the snap and can see the button protruding through the hole.

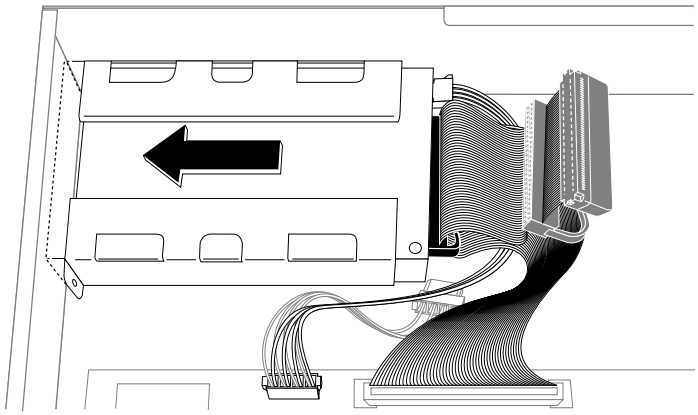

Figure 8-35 Installing the Replacement System Disk Drive

12. Reconnect the SCSI ribbon cable connector and the power cable connector to the floptical drive.

13. Reinstall the floptical drive in the upper drive slot, as shown in Figure 8-36.
    - Position the drive and bracket over the system drive.
    - Slide the metal tabs underneath the bracket into the holes on the top of the system drive's bracket. At the same time make sure that the button release on the right side of the bracket snaps into the chassis.
    - Check that the power cable is not caught between the system drive and the floptical drive.

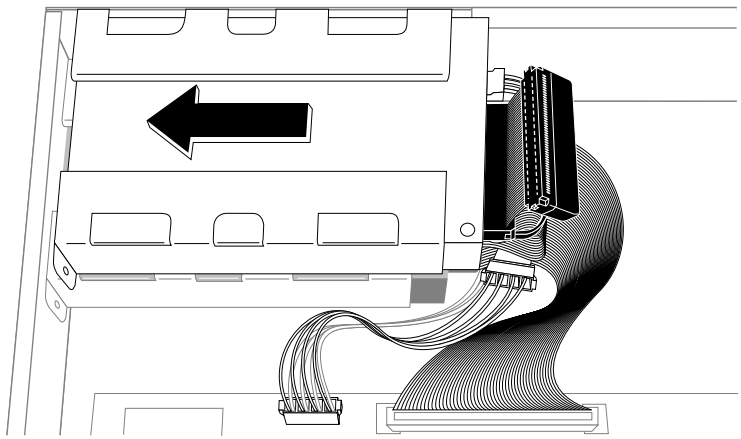

Figure 8-36 Re-installing the Floptical Drive

14. Replace the top cover by inserting the tab through the hole in the rear of the chassis and sliding it back until it snaps into place. For more information, see "Replacing the Top Cover" on page 38.
15. Reconnect the power cable to the connector on the back of the Indy workstation.

You are finished replacing the system disk drive and ready to power on the system.

Replacing the Power Supply

To replace the power supply, follow these steps:

1. If the system is powered on, press and release the power button on the front of the system to shut down the software and power off the system.

   The system powers off automatically after about a minute.

2. Disconnect the power cable from the back of the Indy workstation.
3. Remove the top cover by releasing the latch on the rear of the cover and sliding it forward. For more details, see "Removing the Top Cover" on page 36.
4. Ground yourself to a metal part of the Indy chassis.
   - Unwrap the first two folds of the wrist strap and wrap the exposed adhesive side firmly around your wrist.
   - Unroll the rest of the band and peel the liner from the copper foil at the opposite end.
   - Attach the copper foil to a metal part of the Indy chassis.
5. Move the system or position yourself so that you are facing the rear of the system. Locate the power supply, as shown in Figure 8-37.

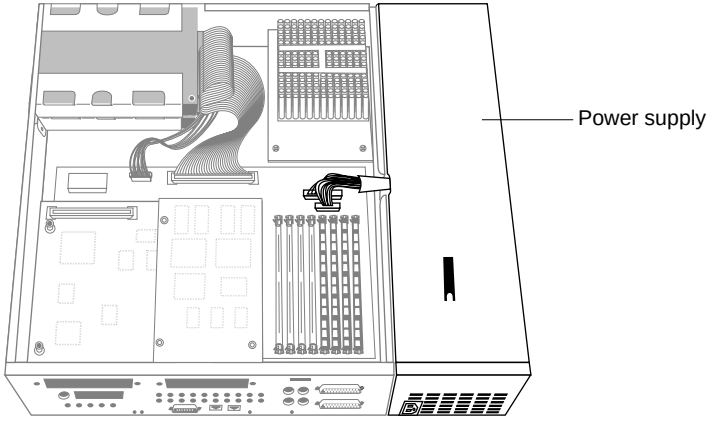

Figure 8-37 Locating the Power Supply

6. Disconnect the two power cables that connect the power supply to the system board. (Refer to Figure 8-38.)
   - Disconnect the smaller of the two cables by grasping the connector (not the cables) and pulling it upward.
   - Disconnect the larger cable by grasping the connector, pressing in the lever on its side and pulling it upward. Do not pull the connector up by the cables.
7. Use a phillips screwdriver to remove the screw that connects the power supply to the chassis.
8. Remove the power supply.
   - Place your right hand on the power supply and your left hand on the chassis a few inches from the power supply, as shown in Figure 8-38.
   - Slide the power supply forward about one quarter-inch to disengage it from the chassis. You may have to exert some pressure.
   - Remove the power supply by pulling it away from the chassis.

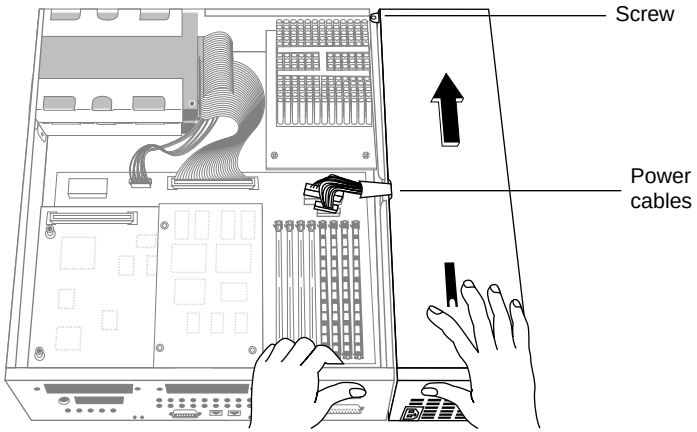

Figure 8-38 Removing the Power Supply

9. Install the replacement power supply.
   - Grasp the replacement power supply with your right hand and place your left hand on the front of the chassis as shown in Figure 8-39.
   - Place the power supply against the chassis and slide it toward you, making sure that the two metal buttons on its side engage in the two holes on the chassis.

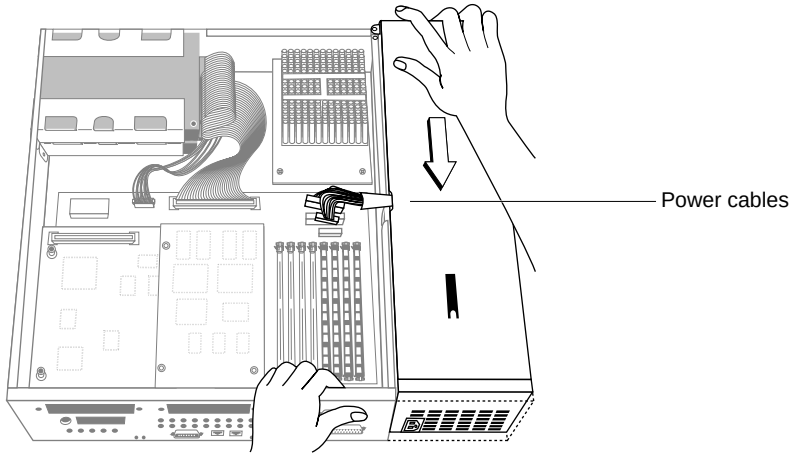

Figure 8-39 Installing the Power Supply

10. Insert and tighten the screw that you removed on the power supply.
11. Connect the two power cables to the system board.
    - Insert the larger of the two power connectors into the socket on the system board, pressing it firmly until seated.
    - Insert the smaller power connector into the socket on the system board, pressing it firmly until seated.
12. Replace the top cover by inserting the tab through the hole in the rear of the chassis and sliding it back until it snaps into place. For more information, see "Replacing the Top Cover" on page 38.

Reconnect the power cable to the connector on the back of the Indy workstation. You are finished replacing the power supply and ready to power on the system.

Replacing External SCSI Devices

To replace an external SCSI device, follow these steps:

1. If the system is powered on, press and release the power button on the front of the system to shut down the software and power off the system.

   The system powers off automatically after about a minute.

2. Disconnect the power cable from back of the Indy workstation.
3. Disconnect the power cable from the SCSI device.
4. Disconnect the SCSI cable from the back of the Indy workstation.
   - Squeeze the clips on both sides of the connector.
   - Pull off the connector.
5. If you are not going to install another external device, replace the terminator that came with your Indy workstation.

   Note: The terminator that shipped with your Indy workstation is a high-density active terminator. The terminator on an external drive may be a low-density terminator. Use only an active high-density terminator to terminate the Indy system.

   - Put the terminator on the SCSI connector on the back of the Indy workstation.

     The SCSI connector is designed so that you can put the terminator on only one way.

   - Secure the clips on each side of the terminator.
6. Reconnect the power cable to the back of the system.
7. Press and release the power button on the front of the system to power up the system.

To install a replacement external SCSI device, follow the instructions in “Installing External SCSI Devices” on page 70.

Chapter 9

Safety, Maintenance, and Regulatory Information

This chapter provides guidelines for adjusting your work surface and environment to increase your comfort and safety. It also contains regulatory statements.

Safety, Maintenance, and Regulatory Information

This chapter gives you information on safety and comfort and some helpful hints on maintaining your Indy workstation. It also gives you important regulatory information.

Maintaining Your Hardware and Software

This section gives you some basic guidelines to follow to keep your hardware and the software that runs on it in good working order.

Hardware Do's and Don'ts

To keep your workstation in good running order, follow these guidelines:

Do not:

- place the Indy workstation on a soft surface such as a carpet; this alters the airflow through the bottom of the chassis
- enclose the workstation in a small, poorly ventilated area (such as a closet), crowd other large objects around it, or drape anything (such as a jacket or blanket) over the workstation
- use the workstation as a shelf or a table (except for the monitor)
- run the workstation with the top cover off; this alters the air flow and can greatly reduce product life
- connect cables (other than audio) or add other hardware components while the workstation is turned on
- move the workstation while it is running, or within 1 minute of powering it down; you may damage the hard disk drive
- use an adapter to plug the workstation into a two-pronged (ungrounded) outlet

- lay the workstation on its side
- place liquids or food on the workstation or keyboard
- dangle the mouse by its cable or throw the mouse at co-workers

Do:

- plug in all cables completely
- plug the workstation into a power surge protection strip (if possible)
- wear the wrist strap provided with the workstation to avoid the discharge of static electricity when installing or replacing SIMM modules or the CPU, graphics, and GIO option boards

Software Do's and Don'ts

When your system is up and running, follow these guidelines:

Do not:

- use the root account unless you are performing administrative tasks

Do:

- make regular backups (weekly for the whole system, nightly for individual users) of all information
- protect the root account with a password
- protect all open accounts (such as lp, guest, etc.) with a password if your system is connected to the Internet

Human Factors Guidelines for Setting Up Your Indy Workstation

You can increase the comfort and safety of your work environment, and decrease your chances of repetitive strain injuries by following the guidelines given below. These guidelines help you create a healthy and productive work environment by:

- using your Indy workstation correctly
- properly choosing a site for your system and its components

- setting up your desk and chair correctly

ANSI Standard for Visual Display Terminal Workstations

Table 9-1 shows recommended guidelines for furniture and system adjustment, as developed by the American National Standards Institute (ANSI).[1]

Local Visual Display Terminal (VDT) guidelines issued by country, state, or municipality may apply and supercede the guidelines in Table 9-1.

Table 9-1 ANSI/HFS 100-1988 Guidelines for VDT Workplace Adjustment

Adjustment	Small Female cm (in)	Midpoint cm (in)	Large Male cm (in)
Seat pan height	40.6 (16.0)	46.3 (18.2)	52.0 (20.5)
Work surface height (keyboard and mouse)	58.5 (23.0)	64.75 (25.5)	71.0 (28.0)
Screen viewing height	103.1 (40.6)	118.1 (46.5)	133.1 (52.4)
Screen viewing distance	>30.5 (>12)	>30.5 (>12)	>30.5 (>12)
Screen viewing angle	0-60 degrees	0-60 degrees	0-60 degrees

Adjustment parameters are defined in Figure 9-1. Guidelines are shown for small females (standing height of 150 cm, or 59 in) and large males (standing height of 185 cm, or 73 in). Midpoints are also interpolated for persons of more average height.

[1] *American National Standard for Human Factors Engineering of Visual Display Terminal Workstations*. ANSI/HFS 100-1988. Available through the Human Factors Society, Inc. P.O. Box 1369, Santa Monica CA 90406, USA.

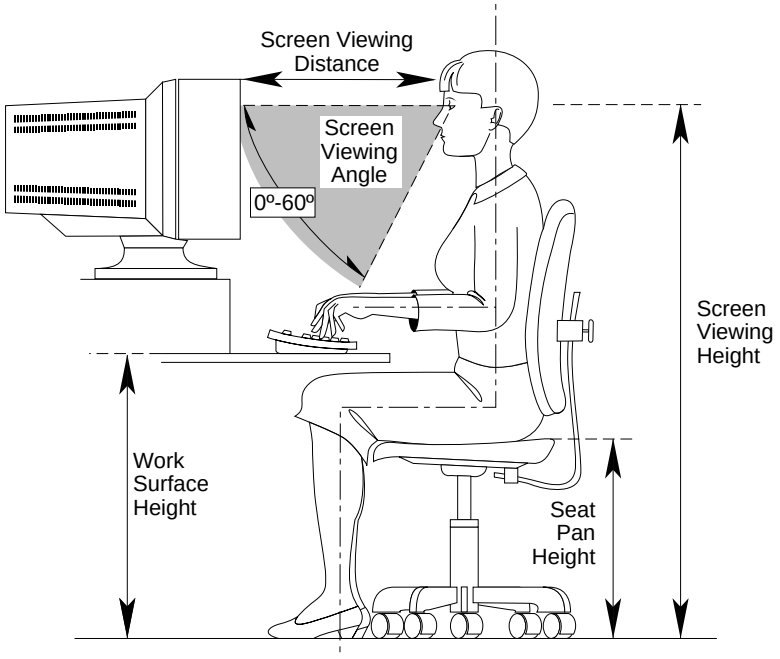

Figure 9-1 Basic Parameters of Visual Display Terminal Workstation Adjustment (Adapted From ANSI/HFS 100-1988)

CAD Operator Preferences

If you work on a CAD system, you may feel more comfortable using the ranges of adjustment shown in Table 9-2.

Table 9-2 Workstation Adjustments Preferred by CAD Users[a]

Adjustment cm (in)	Mean cm (in)	Range cm (in)
Seat pan height	54 (21.3)	50-57 (19.7-22.4)
Work surface height	73 (28.7)	70-80 (27.6 -31.5)
Monitor center above floor	113 (44.5)	107-115 (42.1-45.3)

Table 9-2 (continued) Workstation Adjustments Preferred by CAD Users[a]

Adjustment cm (in)	Mean cm (in)	Range cm (in)
Screen viewing distance	70 (27.6)	59-78 (23.2-30.7)
Work surface tilt	8.6 degrees	2-13 degrees
Monitor tilt[b]	-7.7 degrees	-15 - +1 degrees

a. Derived from Grandjean, Etienne. *Ergonomics in Computerized Offices*. London: Taylor & Francis Ltd., 1987, p. 148.

b. negative tilt = a forward monitor inclination (top of the screen toward the operator)

Tips for Setting Up and Using Your Workstation

The following tips may be useful for setting up an ergonomic work environment that will be safe, comfortable, and productive. Although you may be able to perform this procedure yourself, it is useful to work with a friend to achieve the best fit.

Facilities Selection

1. A good work chair should swivel, and you should be able to adjust the seat height while sitting. The seat should have a rounded front edge. The chair should have a large enough base to remain stable when adjusted to its maximum height. It should have casters or glides. Many chairs rock, which may partially relieve the muscle tension from sitting in a fixed position. Some chairs can also be adjusted for seat tilt and depth, armrest height, backrest angle, and lower back support. Check the instructions that came with your chair to take advantage of its adjustability features.
2. Select a work surface that provides enough space to do your work without excessive turning, twisting, or stretching. The height of the work surface should be adjustable and, if possible, it should be wide enough to use the mouse and keyboard at the same height. This helps your neck, shoulders, and upper arms to stay relaxed while you work.
3. Indirect lighting should be used, whenever possible, to prevent glare on the display screen. If you prefer lower levels of lighting (for example, 200-250 lx) than usually found in offices, separate task lighting may be needed for reading documents. Wearing darker-colored clothing helps minimize glare reflections on the screen.

Adjusting Your Chair, Work Surface, and the Indy Workstation

Adjust your chair first, from a seated position if possible. Your lower leg and thigh should form approximately a 90 degree angle at the knee, and your feet should rest flat on the floor. If you are short, you may want to use a footrest for better comfort.

1. Once your chair is adjusted, raise or lower your work surface to a height that allows you to keep the wrists flat and straight while using the keyboard and mouse. The angle between your lower and upper arm should be 70-90 degrees at the elbow. If necessary, use a padded wrist rest under the keyboard to support your wrists.
2. To minimize screen glare, position your monitor screen perpendicular to overhead lighting sources and windows. Do not set the monitor in front of or behind a window, or parallel to other sources of light. Tilting the screen forward slightly helps avoid glare. Adjusting the monitor controls to minimize brightness and maximize contrast may also reduce the effects of glare.
3. Adjust your monitor height so that your line of sight in your regular seated position is at or near the top the screen. You should be able to see the whole screen without tilting your head forward or backward, within a 60-degree viewing angle of the normal line of sight. With smaller monitors, this may require using a display stand under the monitor base. With larger monitors, it may require a longer viewing distance (see Table 9-2).
4. These adjustment steps should be done each time a different person uses the workstation.

Workstation Use

1. When using the keyboard, mouse, or other input devices, keep the wrists flat as much as possible, and do not rotate the hands inward toward the thumbs or outward toward the fingers.
2. Electronic keyboards and input devices do not require as much force to operate as manual typewriters. Type or click lightly on the keyboard or mouse.
3. Document stands can be mounted on the work surface or swing out on an arm to position documents next to the display. These can be helpful in maintaining a healthy posture for using the workstation (head in approximately a straight line with the body).
4. You may find it helpful to take rest breaks of several minutes every one to two hours. During breaks, focus your eyes on objects or scenery at least 30 feet away, stretch, and move around.

Physical Environment Specifications

Table 9-3 lists the physical environment specifications for the Indy Workstation.

Table 9-3 Physical Environment Specifications for the Indy Workstation

Workstation's dimensions	3"H x 16"W x 14"D
Power Requirements	100 - 132 VAC, 2.4 - 1.8A 200 - 264 VAC, 1.2 - 0.9 A 47 - 63 Hz
Ambient Temperature	+13°C to 35°C (operating) -40°C to +65°C (non-operating
Relative Humidity	10% to 80% operating (no condensation) 5% to 90% non-operating (no condensation)
Heat Dissipation	900 BTU/hour
Altitude	10,000' (operating) 40,000 (non-operating)
Vibration	0.02", 5-19 Hz 0.25 G, 5 - 500 Hz
Noise	36 dB (A) in typical operating position

Manufacturer's Regulatory Declarations

The Indy workstation conforms to several national and international specifications and European Directives listed on the "Manufacturer's Declaration of Conformity" which is included with each product. The CE mark insignia displayed on each device is an indication of conformity to the aforementioned European requirements.

A new "Manufacturer's Declaration of Conformity" may be provided with upgrade or option packages, and may contain upgraded information pertaining to your new workstation configuration.

Caution: Your workstation has several governmental and third-party approvals, licenses, and permits. Do not modify this product in any way that is not expressly approved by Silicon Graphics. If you do, you may lose these approvals and your governmental agency authority to operate this device.

Electromagnetic Emissions

This device complies with the Class B limits of Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

This device complies with Class B electromagnetic emissions limits of C.I.S.P.R. Publication 22, Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment, Germany's BZT Class B limits for Information Technology Equipment, and with Japan's VCCI Class 2 limits.

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取扱説明書に従って正しい取り扱いをして下さい。

Figure 9-2 VCCI Class 2 Statement for Japan

Radio and Television Interference

The equipment described in this guide generates and uses radio frequency energy. If it is not installed and used in accordance with the instructions in this guide, it can cause radio and television interference.

This equipment has been tested and complies with the limits for a Class B computing device in accordance with the specifications in Part 15 of FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential or office installation. However, there is no guarantee that the interference will not occur in a particular installation.

You can determine whether your system is causing interference by turning it off. If the interference stops, it was probably caused by the workstation or one of the peripherals. To tell if the interference is caused by one of the peripherals, try disconnecting one peripheral at a time to see if the interference stops. If it does, that peripheral is the cause of the interference.

If your workstation does cause interference to radio or television reception, try to correct the interference by using one or more of the following suggestions:

Turn the television or radio antenna until the interference stops.

- Move the workstation to one side or the other of the radio or television.
- Move the system farther away from the radio or television.
- Plug the system into an outlet that is on a different circuit from the radio or television. (That is, make certain the workstation and the radio or television are on circuits controlled by different circuit breakers or fuses.)

Electrostatic Discharge

Silicon Graphics designs and tests its products to be immune to effects of electrostatic discharge (ESD). ESD is a source of electromagnetic interference and can cause problems ranging from data errors and lockups to permanent component damage.

It is important that while you are operating your Indy workstation you keep the top cover in place. The shielded cables that came with the system and its peripherals should be installed correctly, with all screws/thumbscrews fastened securely.

An ESD wrist strap is included with the Indy workstation and with some products such as memory and graphics upgrades. The wrist strap is used when installing these upgrades to prevent the discharge of static electricity, and it should protect your system from ESD damage.

Shielded Cables

The Indy workstation is FCC-compliant under test conditions that include the use of shielded cables between the Indy workstation and its peripherals. Your Indy workstation and any peripherals you purchase from Silicon Graphics have shielded cables. Shielded cables reduce the possibility of interference with radio, television, and other devices. If you use any cables that are not from Silicon Graphics, make sure they are shielded. Telephone cables do not need to be shielded.

The monitor cable supplied with your system uses additional filtering molded into the cable jacket to reduce radio frequency interference. Always use the cable supplied with your system. If your monitor cable becomes damaged, a replacement cable should be obtained from Silicon Graphics.

Limited User Warranty

Silicon Graphics, Inc. warrants this hardware product, option or accessory against defects in material and workmanship for a period of twelve (12) months after the date of its original retail purchase (the "Warranty Period"). If you discover a defect in the Product during the Warranty Period, Silicon Graphics will, at its sole option, repair or replace the Product at no charge to you, provided that you (i) return the product (transportation charges prepaid) during the Warranty Period to the authorized Silicon Graphics dealer (or Silicon Graphics service center, if purchased directly from Silicon Graphics) from whom it was purchased, or return it to another authorized Silicon Graphics dealer in the country of its original purchase, and (ii) have included a copy of a bill of sale bearing the appropriate Silicon Graphics serial number as proof of the original date and location of the Product's purchase. This warranty applies only to hardware products manufactured by or for Silicon Graphics and distributed under Silicon Graphics' trademarks, and does not apply to any (i) Silicon Graphics software accompanying the Product, which is licensed under a separate statement included with the software, (ii) Product that has been damaged by abuse, accident, misuse, misapplication or improper installation, and (iii) any Product that has been modified or has had its serial number removed or defaced.

The warranties and remedies specified above are exclusive, and are in lieu of, and Silicon Graphics disclaims, all others, express, implied, oral or otherwise, including, without limitation, any warranty of merchantability or fitness for a particular purpose. No oral or written information or advice given by Silicon Graphics, or its dealers or distributors, will create a warranty or increase the scope of this warranty, and you may not rely on such information or advice. Some states do not allow the exclusion of implied warranties, so the exclusion above may not apply to you. Any applicable implied warranties are limited in duration to the period of time specified above. This warranty gives you specific legal rights, and you may have other rights that vary from state to state. Silicon Graphics is not liable for any special, consequential, incidental or indirect damages of any kind (including without limitation loss of profits, data or goodwill, or property damage), whether or not Silicon Graphics has been advised of the possibility of such loss, however caused and on any theory of liability, arising out of the use of the product, or resulting from a breach of this warranty. These limitations shall apply notwithstanding the failure of the essential purpose of any limited remedy. Silicon Graphics' liability for actual damages for any cause whatsoever, regardless of the form of action, will be limited to the net amount paid by you for the purchase of the Product that caused the damages or is directly related to the cause of action. Some states do not allow the limitation or exclusion of liability for incidental or consequential damages, so this limitation may not apply to you.

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Appendix A

Cable Pinout Assignments

This appendix provides cable pinout assignments for the external ports on the Indy workstation.

Cable Pinout Assignments

This appendix contains cable pinout information for the following ports located on the back of the Indy workstation:

- serial
- parallel
- Ethernet 10-BASE T
- ISDN (Integrated Services Digital Network)
- Ethernet AUI (Access Unit Interface)
- keyboard
- mouse
- SCSI port (Small Computer System Interface)
- audio
- video
- graphics
- stereo view

Serial Ports

Table A-1 and Table A-2 shows cable pinout assignments for the serial ports.

Table A-1 4D Compatible Pin Assignments (RS-232)

Pin	Assignment	Description
1	DTR	Data Terminal Ready
2	CTS	Clear To Send
3	TD	Transmit Data
4	SG	Signal Ground
5	RD	Receive Data
6	RTS	Request To Send
7	DCD	Data Carrier Detect
8	SG	Signal Ground

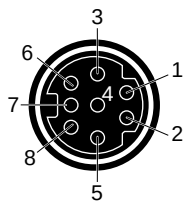

Figure A-1 Serial Port Pinout Assignment

Table A-2 Macintosh® Plus, SE, and II Compatible Pin Assignments (RS-422)

Pin	Assignment	Description
1	HSKo	Output Handshake
2	HSKi	Input Handshake or External Clock
3	TxD–	Transmit Data –

Table A-2 (continued) Macintosh® Plus, SE, and II Compatible Pin Assignments (RS-422)

Pin	Assignment	Description
4	GND	Signal Ground
5	RxD–	Receive Data –
6	TxD+	Transmit Data +
7	GPi	General Purpose Input
8	RxD+	Receive Data +

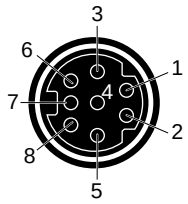

Figure A-2 Serial Port Pinout Assignments

Parallel Port

Table A-3 shows the cable pinout assignments for the parallel port.

Table A-3 Parallel Port (25-pin DSUB Connector) Pin Assignments

Pin	Assignment
1	STROBE
2	DATA(0)
3	DATA(1)
4	DATA(2)
5	DATA(3)
6	DATA(4)

Table A-3 (continued) Parallel Port (25-pin DSUB Connector) Pin Assignments

Pin	Assignment
7	DATA(5)
8	DATA(6)
9	DATA(7)
10	ACK
11	BUSY
12	PE (Paper End)
13	SELECT
14	AUTOFEED
15	ERROR/FAULT
16	INIT/RESET
17	SELECT-IN (Direction)
18	GROUND
19	GROUND
20	GROUND
21	GROUND
22	GROUND
23	GROUND
24	GROUND
25	GROUND

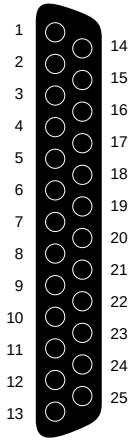

Figure A-3 Parallel Port Pinout Assignments

Ethernet 10-BASE T Port

Table A-4 shows the cable pinout assignments for the Ethernet 10-BASE T port.

Table A-4 Ethernet 10-BASE T Port Pin Assignments

Pin	Assignment
1	TRANSMIT+
2	TRANSMIT–
3	RECEIVE+
4	(Reserved)
5	(Reserved)
6	RECEIVE–
7	(Reserved)
8	(Reserved)

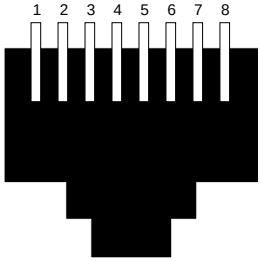

Figure A-4 Ethernet 10-BASE T Port Pinout Assignments

ISDN Port

Table A-5 shows the cable pinout assignments for the ISDN port.

Table A-5 ISDN Port Pin Assignments

Pin	Assignment
1	(Reserved)
2	(Reserved)
3	TRANSMIT+
4	RECEIVE+
5	RECEIVE-
6	TRANSMIT-
7	(Reserved)
8	(Reserved)

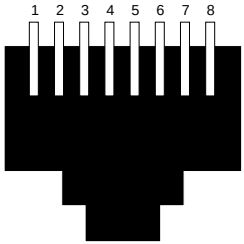

Figure A-5 ISDN Port Pinout Assignments

Ethernet AUI Port

Table A-6 shows the cable pinout assignments for the Ethernet AUI port.

Table A-6 Ethernet AUI Port (Thicknet) Pin Assignments

Pin	Assignment
1	GROUND
2	COLLISION+
3	TRANSMIT+
4	GROUND
5	RECEIVE+
6	GROUND
7	(Reserved)
8	GROUND
9	COLLISION-
10	TRANSMIT-
11	GROUND
12	RECEIVE-
13	+12V

Table A-6 (continued) Ethernet AUI Port (Thicknet) Pin Assignments

Pin	Assignment
14	GROUND
15	(Reserved)

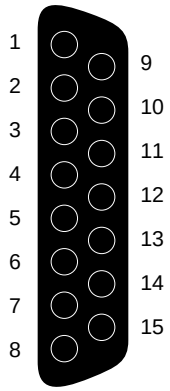

Figure A-6 Ethernet AUI Port Pinout Assignments

Keyboard Port

Table A-7 shows the cable pinout assignments for the keyboard port.

Table A-7 Keyboard Port (6-pin MINIDIN) Pin Assignments

Pin	Assignment
1	KEYBOARD DATA
2	(Reserved)
3	GROUND
4	KEYBOARD POWER (+5V)

Table A-7 (continued) Keyboard Port (6-pin MINIDIN) Pin Assignments

Pin	Assignment
5	KEYBOARD CLOCK
6	(Reserved)

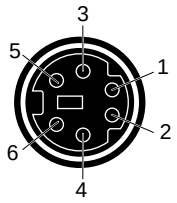

Figure A-7 Keyboard Port Pinout Assignments

Mouse Port

Table A-8 shows the cable pinout assignments for the mouse port.

Table A-8 Mouse Port (6-Pin MINIDIN) Pin Assignments

Pin	Assignment
1	MOUSE DATA
2	(Reserved)
3	GROUND
4	MOUSE POWER (+5V)
5	MOUSE CLOCK
6	(Reserved)

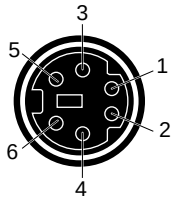

Figure A-8 Mouse Port Pinout Assignments

SCSI Port

Table A-9 shows the cable pinout assignments for the SCSI port.

Table A-9 SCSI Port Pin Assignments

Pin	Assignment
1	GROUND
2	GROUND
3	GROUND
4	GROUND
5	GROUND
6	GROUND
7	GROUND
8	GROUND
9	GROUND
10	GROUND
11	GROUND
12	(Reserved)
13	Open
14	(Reserved)

Table A-9 (continued) SCSI Port Pin Assignments

Pin	Assignment
15	GROUND
16	GROUND
17	GROUND
18	GROUND
19	GROUND
20	GROUND
21	GROUND
22	GROUND
23	GROUND
24	GROUND
25	GROUND
26	DB(0)
27	DB(1)
28	DB(2)
29	DB(3)
30	DB(4)
31	DB(5)
32	DB(6)
33	DB(7)
34	DB(P)
35	GROUND
36	GROUND
37	(Reserved)
38	TERMPWR

Table A-9 (continued) SCSI Port Pin Assignments

Pin	Assignment
39	(Reserved)
40	GROUND
41	ATN
42	GROUND
43	BSY
44	ACK
45	RST
46	MSG
47	SEL
48	C/D
49	REQ
50	I/O

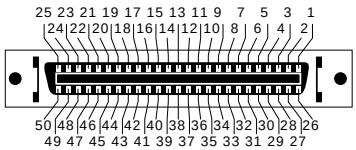

Figure A-9 SCSI Port Pinout Assignments

Audio Port

Table A-10 shows the cable pinout assignments for the audio ports.

Table A-10 Audio Ports Pin Assignments

Connector	Tip	Ring	Sleeve
Digital Input/Output	Out	In	GROUND
Headphone Output/Line Output 2	L	R	GROUND
Line Output 1	L	R	GROUND
Line Input 1	L	R	GROUND
Microphone Input/Line Input 2	L	R	GROUND

Analog Composite Video (RCA) Port

Table A-11 shows the cable pinout assignments for the analog composite video (RCA) port

Table A-11 Analog Composite Video (RCA) Port Pin Assignments

Pin	Assignment
2 (sleeve)	GROUND
3 (tip)	COMPOSITE VIDEO (NTSC OR PAL)

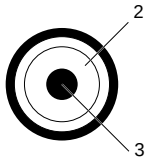

Figure A-10 Analog Composite Video (RCA) Port Pinout Assignments

Analog S-Video Port

Table A-12 shows the cable pinout assignments for the analog s-video port.

Table A-12 Analog S-Video Port Pin Assignments

Pin	Assignment
1	GROUND
2	GROUND
3	LUMINANCE (BRIGHTNESS)
4	CHROMINANCE (COLOR)

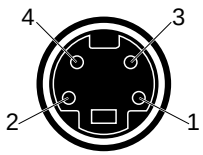

Figure A-11 Analog S-Video Port Pinout Assignments

Digital Video Port

Table A-13 shows the cable pinout assignments for the digital video port for the Silicon Graphics IndyCam digital video camera.

Table A-13 Digital Video Port for the IndyCam Camera

Pin	Assignment
1	(Reserved)
2	(Reserved)
3	(Reserved)
4	(Reserved)

Table A-13 (continued) Digital Video Port for the IndyCam Camera

Pin	Assignment
5	(Reserved)
6	(Reserved)
7	SERIAL CONTROL DATA
8	(Reserved)
9	SERIAL CONTROL CLOCK
10	(Reserved)
11	(Reserved)
12	CLOCK GROUND
13	CLOCK
14	(Reserved)
15	(Reserved)
16	(Reserved)
17	(Reserved)
18	(Reserved)
19	(Reserved)
20	(Reserved)
21	(Reserved)
22	+12
23	+5
24	-12
25	(Reserved)
26	(Reserved)
27	DATA(7) GROUND
28	DATA(7)

Table A-13 (continued) Digital Video Port for the IndyCam Camera

Pin	Assignment
29	DATA(6) GROUND
30	DATA(6)
31	DATA(3)
32	DATA(3) GROUND
33	DATA(4)
34	DATA(4) GROUND
35	DATA(5)
36	DATA(5) GROUND
37	(Reserved)
38	(Reserved)
39	(Reserved)
40	(Reserved)
41	(Reserved)
42	(Reserved)
43	(Reserved)
44	(Reserved)
45	(Reserved)
46	DATA(0)
47	DATA(0) GROUND
48	DATA(1)
49	DATA(1) GROUND
50	DATA(2)
51	DATA(2) GROUND
52	(Reserved)

Table A-13 (continued) Digital Video Port for the IndyCam Camera

Pin	Assignment
53	(Reserved)
54	(Reserved)
55	(Reserved)
56	(Reserved)
57	(Reserved)
58	(Reserved)
59	(Reserved)
60	(Reserved)

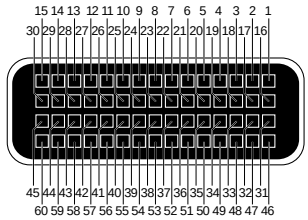

Figure A-12 Digital Video Port Pinout Assignments

Graphics Port

Table A-14 shows the cable pinout assignments for the Indy graphics port and Indy XZ graphics port.

Table A-14 Graphics Port Pin Assignments

Pin	Assignment
1	MONITOR TYPE (3) (active low)(For Indy XZ, pin 1 is RESERVED)
2	MONITOR TYPE (0) (active low)
3	RESERVED
4	RESERVED
5	RESERVED
6	MONITOR TYPE (1) (active low)
7	MONITOR TYPE (2) (active low)
8	GROUND
9	GROUND
10	GROUND

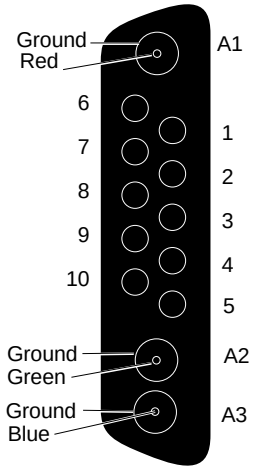

Figure A-13 Graphics Port Pinout Assignments

Stereo View Port

Table A-15 shows the cable pinout assignments for the stereo view port.

Table A-15 Stereo View Port Pin Assignments

Pin	Assignment
1	STEREO POWER (+12V, 0.5A)
2	STEREO GROUND
3	VERTICAL - ODD FIELD

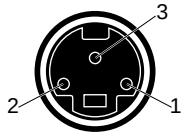

Figure A-14 Stereo View Port Pinout Assignments

Appendix B

Serial Cables

This appendix provides information on which serial cables you can use with your Indy workstation.

Serial Cables

You may want to connect other serial devices to your Indy workstation. In this appendix you'll find information on which serial cables you can use with your workstation.

Printer/Dumb Terminal Serial Cable

To use serial printers and dumb terminals, use a 3-wired standard Macintosh® (Plus, SE, or II) to Imagewriter®I cable. (Note that the Imagewriter II cable does not work). The cable connector pin assignments for this cable are shown in Table B-1.

Table B-1 Cable Connector Pinout Assignments for the Printer/Dumb Terminal Serial Cable

Signal Description	Pin Number DIN-8 Connector (Male)	Pin Number DB-25 Connector (Male)
	1	N/C
	2	N/C
TXD	3	3
GND	4	7
RXD	5	2
	6	N/C
	7	N/C
GND	8	7

Note: For a 3-wire cable and no hardware flow control modem, you must use the */dev/ttyd** command devices in the configuration files. For more detailed information, see the *serial* man page. To access the man page, place the cursor in the console window and type

```
man serial
```

Modem Cable

Use a full-handshake (includes RTS and CTS) serial cable for a modem with RTS/CTS flow control. You can use this cable for all serial devices except terminals and serial printers (any application that doesn't need RTS flow control). For example, you can use this cable for a 3-wire application. This cable can be used with a null modem adapter for serial printers and dumb terminals. You can purchase the full-handshake serial cable from Silicon Graphics or your local service provider.

Note: You cannot use a standard Macintosh serial cable. The Macintosh cable does not have the correct pinout for full flow control.

The cable connector pin assignments for this cable are shown in Table B-2.

Table B-2 Cable Connector Pin Assignments for a Modem Cable

Signal Description	Pin Number DIN-8 Connector (Male)	Pin Number DB-25 Connector (Male)
DTR	1	20
CTS	2	5
TXD	3	2
GND	4	7
RXD	5	3
RTS	6	4
DCD	7	8
GND	8	7

Note: If you are attaching a modem with modem signals and RTS/CTS flow control, you must use the */dev/ttyf** command devices in the configuration files. For more detailed information, see the *serial* man page. To access this man page, place the cursor in the console window and type

```
man serial
```

Serial Devices Using a Silicon Graphics Adapter Cable

To use the devices below, you'll need a serial adapter cable supplied by Silicon Graphics.

- dial and button box
- dials box
- digitizer tablet
- Spaceball™
- optical mouse

The Silicon Graphics adapter cable is used to convert the serial cable that came with the device to a Silicon Graphics DIN-8 serial cable connector. This cable then connects to the serial connector on the back of the Indy chassis. The cable connector pinout assignments are shown in Table B-3.

Table B-3 Pinout Assignments for the Silicon Graphics Adapter Cable

Signal Description	Pin Number DIN-8 Connector (Male)	Pin Number DB-9 Connector (female)
DTR	1	9
CTS	2	5
TXD	3	2
GND	4	7
RXD	5	3
RTS	6	4
DCD	7	8
GND	8	7
	N/C	6
	N/C	1

Serial Devices Using a PC Adapter Cable

To use a serial device designed for use with personal computers using a DB-9 connector, you'll need a PC adapter cable. To obtain the cable, contact your local service provider. This adapter cable is used to convert from the PC's DB-9 pinout to the Indy workstation's DIN-8 pinout.

The cable connector pinout assignments for the PC adapter cable are shown in Table B-4.

Table B-4 Cable Connector Pin Assignments for the PC Adapter Cable

Signal description	Pin Number DIN-8 (Male)	Pin Number DB-9 (Male)
DTR	1	4
CTS	2	8
TXD	3	3
GND	4	5
RXD	5	2
RTS	6	7
DCD	7	1
DSR	8	6
	N/C	9

Appendix C

Floptical Drive Jumper Settings

This appendix provides information on jumper settings for the floptical drive supplied by Silicon Graphics, Inc. for your Indy workstation.

Floptical Drive Jumper Settings

There are seven sets of pins, E1 through E7, on the jumper block, as shown in Figure C-1. Pins E1, E2, and E3 define the SCSI address.

The floptical drive supplied by Silicon Graphics is preconfigured to SCSI address 2. There should be a pin on jumper 2, and none on jumpers 1 and 3.

Note: There is a jumper installed on E4; *do not remove it*.

If the jumpers on the floptical drive do not match Figure C-1, use a pair of needle-nose pliers to remove and install them correctly. To remove the drive, go to "Replacing the Internal Floptical Drive or Second Hard Disk Drive" on page 158.

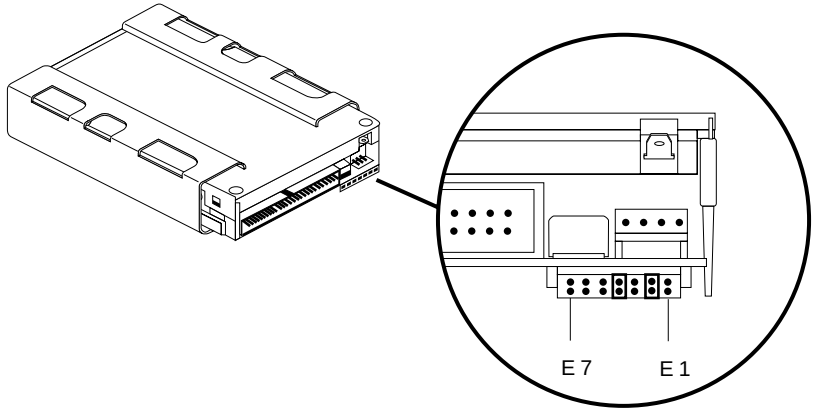

Figure C-1 Floptical Drive Jumpers Set to SCSI Address 2

Appendix D

International Keyboard Support

This appendix provides information on selecting an international keyboard layout for the language of your choice on your Indy workstation.

International Keyboard Support

The Indy workstation uses a PS/2-compatible keyboard that does not support software identification for the varied international keyboard languages that Silicon Graphics offers.

Instead, you select the keyboard layout from the System Maintenance menu. To do this, follow these steps:

1. After you've assembled the workstation, turn on the power, as shown in Figure D-1.
   - Press the power switch on the front of the monitor to turn on your monitor.
   - Press the power button to turn on the system, as shown in Figure D-1.

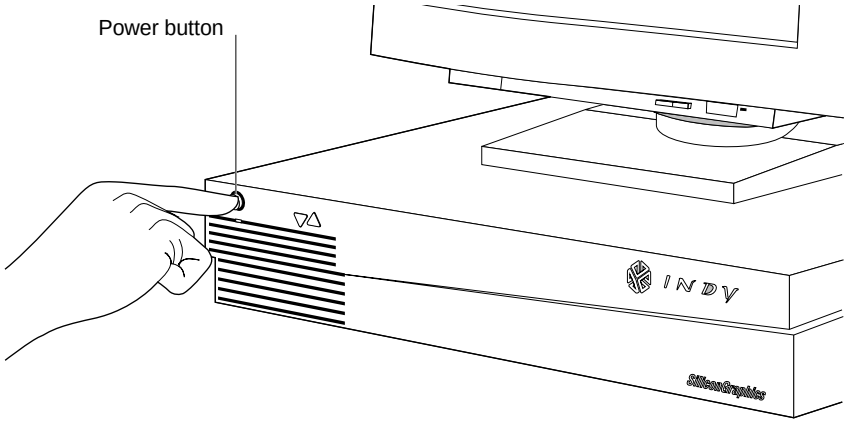

Figure D-1 Turning on the Power on the Indy Workstation

2. While the system is powering up, you see the notifier shown in Figure D-2 on your monitor screen.

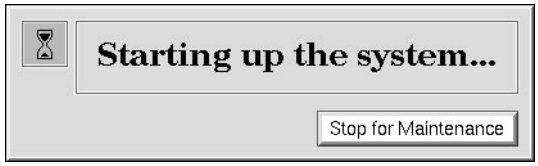

Figure D-2 System Startup Notifier

3. Click *Stop for Maintenance* to display the System Maintenance menu icons.
4. Click the Select *Keyboard Layout* icon.

   The Keyboard Layout menu is displayed, as shown in Figure D-3.

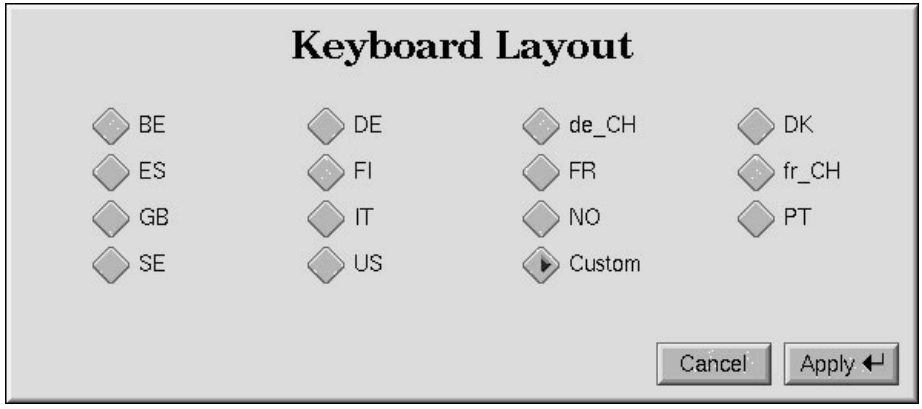

Figure D-3 Keyboard Layout Form

5. Click the box next to the name that describes your keyboard, then click *Apply*.

Table D-1 lists the keyboard layout choices and their corresponding languages.

Table D-1 Keyboard Layout Language Choices

Keyboard Layout	Language
BE	Belgian
DE	German
de_CH	Swiss German
DK	Danish
ES	Spanish
FI	Finnish
FR	French
fr_CH	Swiss French
GB	Great Britain
IT	Italian
NO	Norwegian
PT	Portuguese
SE	Swedish
US	United States
Custom	Language you select

To test if the correct layout was selected, click the *Command Monitor* icon, and try typing some sample text, including special characters specific to your keyboard.

Glossary

account

See login account.

active window

The only window that recognizes input (activity) from the keyboard and mouse; only one window is active at a time.

address dial

See SCSI address dial.

administrator

The person who can use the most privileged account, root. This person must have his own personal login account for daily use, but when there are serious system problems to correct, the person logs in to the root account to change system information using the graphical tools or using the IRIX shell.

The Administrator has all the capabilities of a Privileged User, plus the capability to change information in the root account (such as the password) and to log in to an IRIX shell as root. Because there is only one root account, there is only one Administrator per system. The Information Panel for a particular system includes the name of the system's Administrator so other users know who to contact for help.

See network administrator.

back up

To copy a certain set of files and directories from your hard disk to a tape or other media.

backup tape

A tape that contains a copy of a set of files and directories that are on your hard disk. A full backup tape contains a copy of all files and directories, including IRIX, that are on your hard disk.

baud rate

A term used for the speed (calculated as bits per second) at which the computer sends information to a serial device, such as a modem or terminal.

boot

To start up the system by turning on the workstation and monitor; the system is fully booted when you see the console login: prompt or the login screen.

button

On a mouse, a button is a switch that you press with a finger. In a window on your screen, a button is a labelled rectangle that you click using the cursor and mouse.

CCIR 601

A high-end digital video interface standard developed by the CCIR (Comité Consultatif International de Radiodiffusion, or International Radio Consultative Committee). In CCIR 601 the luminance and chrominance are broken down into three digital signals: one for luminance (brightness) and two for chrominance (color) information. The color information is spatially subsampled horizontally so that the two chroma components occupy the same data bandwidth as the luminance component. Both the luminance and chrominance are then multiplexed up to a double rate byte wide data stream. The Silicon Graphics digital standard used in the Indy workstation is very similar to 601, with the exception that 601 is balanced ECL, while Silicon Graphics uses single-ended TTL. Additionally, 601 requires a fixed number of samples per horizontal line, while the Silicon Graphics implementation is programmable.

CD-ROM disk (CD)

A flat metallic disk that contains information that you can view and copy onto your own hard disk; you cannot change or add to the information on the CD-ROM. CD-ROM is short for compact disk: read-only memory.

centralized network

A network where a central server controls services and information; the server is maintained by one or more individuals called network administrators. On a centralized network that uses NIS, this server is called the NIS master, and all other systems on the network are called NIS clients. See also network administrator, NIS, NIS client, NIS domain, and NIS master.

choose

To press the left mouse button to bring up a pop-up menu, move the cursor to highlight the command that you want to run, then release the button.

chrominance

In an image reproduction system, a separate signal that contains the color information. Black, white, and all shades of gray have no chrominance and contain only the luminance (brightness) portion of the signal. However, all colors have both chrominance and luminance.

Chrominance is derived from the I and Q signals in the NTSC television system and the U and V signals in the PAL television system. *See also* luminance.

click

To hold the mouse still, and then press and immediately release a mouse button.

composite video

A color encoding method or a video signal that contains all of the color, brightness, and synchronizing information in one signal. The chief composite television standard signals are NTSC, PAL, and SECAM. *See also* NTSC, PAL, and SECAM.

configuration file

A system file that you change to customize the way your system behaves. Such files are sometimes referred to as customization files.

confidence test

A test that you run to make sure a particular device (such as the keyboard, mouse, or a drive) is set up and working properly.

connector

Hardware at the end of a cable that lets you fasten the cable to an outlet, port, or another connector.

console window

The window that appears as a stowed icon each time you log in; IRIX reports all status and error messages to this window.

CPU module

The printed circuit board within your workstation chassis that contains the central processing unit. When you open the top cover of the Indy workstation, it is the board on the lower left, between the power supply and the system disk drive.

current working directory

The directory within the file system in which you are currently located when you are working in a shell window.

cursor

The small red arrow on the screen that echoes the movements of the mouse. It changes shape depending on its location on the screen.

DAT (Digital Audio Tape)

A magnetic tape from which you can read and to which you can copy audio and digital information.

default printer

The printer to which the system directs a print request if you do not specify a printer when you make the request. You set the default printer using the Print Manager.

default subsystems

Portions of a product that will be installed automatically if you do not customize a product installation.

defaults

A set of behaviors that Silicon Graphics, Inc. specifies on every system. You can later change these specifications which range from how your screen looks to what type of drive you want to use to install new software.

diagnostics

A series of tests that check all hardware components of your system.

directory

A container in the file system in which you store other directories and files.

disk resource

Any disk (hard, CD-ROM, floppy, or floptical) that you can access either because it is physically attached to your workstation with a cable, or it is available over the network using NFS. *See also* NFS.

disk use

The percentage of space on your disk that contains information.

double-click

To hold the mouse still, then press and release it twice, very rapidly. When you double-click an icon it opens into a window; when you double-click the Window menu button the window closes.

drag

To press and hold down a mouse button, then move the mouse. This drags the cursor to move icons or to highlight menu items.

drive

A hardware device that lets you access information on various forms of media, such as hard, floppy, and CD-ROM disks, and magnetic tapes.

drive address

See SCSI address.

external device

Any piece of hardware that is attached to the workstation with a cable.

export

To use NFS software to make all or part of your file system available to other users and systems on the network.

female connector

A connector that has indentations or holes into which you plug a male connector. An example of a female connector is an electrical wall outlet that accepts an electrical plug.

field

An area in a window in which you can type text.

file

A container in which you store information such as text, programs, or images you create using an application.

file system

A hierarchy of directories and files. Directories contain other directories and files; files cannot contain directories. The root (/) directory is at the top of the hierarchy.

floptical disk drive

A disk drive that combines magnetic recording methods with an optical servo-mechanism that allows large amounts of information to be stored in a small amount of space.

form

A window that contains buttons that you must click and/or editable fields that you must fill in.

GIO64 bus

The main Indy system bus that connects the CPU, memory, graphics, I/O, video, and GIO expansion slots.

GIO option boards

Graphics I/O option boards such as video, network, and fast SCSI-2 that connect to the GIO32-bis expansion slots on the graphics board in the Indy workstation.

graphics board

The printed circuit board within your workstation that contains the graphics processors. When you open the top cover of the Indy workstation, it is the board at the back on the right, beneath any GIO option boards, if installed.

grounded electrical outlet

An electrical wall outlet that accepts a plug that has a grounding prong. In the USA, all three-prong outlets are grounded.

handshake

The protocol that controls the flow of information between a workstation and a printer or any other peripheral. A hardware handshake uses only cable wires and pins to control the flow. A software handshake (also called xon-xoff flow control) uses a combination of pins, wires, and software.

highlight

To change the color of an item on the screen by positioning the cursor over it (locate-highlight) or by positioning the cursor over it and pressing a mouse button.

home directory

The directory into which IRIX places you each time you log in. It is specified in your login account; you own this directory and, typically, all its contents.

host

Any system connected to the network.

hostname

The name that uniquely identifies each host (system) on the network.

human factors guidelines

A set of standards and suggestions for making your working environment more comfortable and healthy.

icon

A small picture that represents a stowed or closed file, directory, application, or IRIX process.

internal drive

A drive that fits inside the workstation and connects to an internal port; it is never connected with a cable to a visible external port. An internal drive is occasionally referred to as a front-loading drive.

IP address

The Internet Protocol number that uniquely identifies each host (system) on the network.

IRIS

A graphics workstation manufactured by Silicon Graphics, Inc.

IRIX

Silicon Graphics, Inc.'s version of the UNIX operating system. See also system software.

ISDN (Integrated Services Digital Network)

A combination of software, hardware, and telephone services that let you communicate with other systems and networks over a high-speed telephone line just as you communicate with other systems and networks over an Ethernet cable.

ISDN (Integrated Services Digital Network) port

The Indy workstation has a single ISDN basic rate interface that supports Point-to-Point Protocol (PPP). PPP enables TCP/IP networking across ISDN B-channels.

jot

The text editor that comes as a standard utility on Silicon Graphics, Inc. workstations.

KB (kilobyte)

A standard unit for measuring the information storage capacity of disks and memory (RAM and ROM); 1024 bytes make one kilobyte.

LED (Light Emitting Diode)

A light on a piece of hardware that indicates status or error conditions.

launch

To start up an application, often by double-clicking an icon.

local workstation, drive, disk, file system, or printer

The physical workstation whose keyboard and mouse you are using, all hardware that is connected to that workstation, and all software that resides on that hardware or its removable media.

log in

To give the system your login name so you can start a session on the Indy workstation.

log out

To end a session on the Indy workstation.

login account

A database of information about each user that, at the minimum, consists of login name, user ID, and a home directory.

login name

A name that uniquely identifies a user to the system.

login screen

The window that you see after powering on the system, before you can access files and directories. The window can contain one icon for each login account on the system.

luminance

The perceived brightness of a surface. Typically refers to a weighted average of red, green, and blue color values that gives the perceived brightness of the combination. For video systems, luminance is the video signal that describes the amount of light in each pixel. *See also* chrominance.

Mb (Megabyte)

A standard unit for measuring the information storage capacity of disks and memory (RAM and ROM); 1024 kilobytes make one megabyte.

male connector

A connector that has raised edges, pins, or other protruding parts that you plug into a female connector. An example of a male connector is an electrical plug that you plug into a wall outlet.

man page

An online document that describes how to use a particular IRIX command.

menu

A list of operations or commands that the Indy workstation can carry out on various objects on the screen.

MIDI (Musical Instrument Digital Interface)

On the Indy workstation, a MIDI device (such as a keyboard) can be connected to the serial port.

monitor

A hardware device that displays the images, windows, and text with which you interact to use the system. It is also called a video display terminal (VDT).

monitor video cable

The cable that connects the monitor to the workstation to transmit video signals. It is thick and beige, with large connectors on both ends.

monitor power cable

The cable that connects the monitor to the workstation to provide power to the monitor. It is thick and beige, with a male connector on one end and a female connector on the other.

mount point

The directory on your workstation from which you access information that is stored on a local or remote disk resource.

mount

To make a file system that is stored on a local or remote disk resource accessible from a specific directory on your workstation.

mouse

A hardware device you use to communicate with windows and icons. You move the mouse to move the cursor on the screen, and you press its buttons to initiate operations. An optical mouse must always be on the mouse pad for the IRIS system to interpret its movements; a mechanical mouse works on any clean, flat surface.

mouse pad

For an optical mouse, this is the rectangular, metallic surface that "reads" the movements of the mouse. For a mechanical mouse, this is a clean, soft rectangular surface that makes the mouse's track ball roll efficiently.

network

A group of computers and other devices (such as printers) that can all communicate with each other electronically to transfer and share information.

network administrator

The individual(s) responsible for setting up, maintaining, and troubleshooting the network, and for supplying setup information to system administrators of each system.

NFS (Network File System)

A networking software option that lets you access files and directories that reside on the disks of other workstations as if they resided on a local disk in your own workstation.

notifier

A form that appears when the system requires you to confirm an operation that you just requested, or when an error occurs.

NTSC

A color television standard or timing format encoding all of the color, brightness, and synchronizing information in one signal. Used in North America, most of South America, and most of the Far East, this standard is named after the National Television Systems Committee, the standardizing body that created the system in the United States in 1953. NTSC uses a total of 525 horizontal lines per frame, with two fields per frame of 262.5 lines each. Each field refreshes at 60 Hz (actually 59.64 Hz).

open

To double-click an icon, or to select an icon then choose "Open" from a menu in order to display a window that contains the information that the icon represents.

option drive

Any internal drive other than the system disk. Option drives include floppy disk drives, floptical disk drives, secondary hard disk drives, or DAT drives.

outlets

Openings in the hardware to which you attach connectors to make an electrical connection.

PAL

A color television standard or timing format developed in West Germany and used by most other countries in Europe, including the United Kingdom but excluding France, as well as Australia and parts of the Far East. PAL uses a total of 625 horizontal lines per frame, with two fields per frame of 312.5 lines per frame. Each field refreshes at 50 Hz. PAL encodes color differently from NTSC. PAL stands for Phase Alternation Line or Phase Alternated by Line, by which this system attempts to correct some of the color inaccuracies in NTSC. *See also* NTSC and SECAM.

PROM monitor

The interface that you use to communicate with the system after it is powered up, but before it is booted up and running IRIX.

Printer Manager

A tool that you access through either System toolchest or the System Manager that you use to set up printer software and monitor jobs that you send to the printer.

parallel device

Any hardware device that requires a parallel cable connection to communicate with the workstation. A parallel interface transfers bits of information down a number of wires simultaneously.

parallel port

An outlet on the workstation to which you connect external parallel devices. A parallel interface transfers bits of information down a number of wires simultaneously.

password

A combination of letters and/or numbers that only you know; it is an optional element of your login account. If you specify a password for your account, you must type it after you type your login name before the system lets you access files and directories.

pathname

The list of directories that leads you from the root (/) directory to a specific file or directory in the file system.

peripheral

A hardware device that adds more functionality to the basic workstation, such as a tape drive. See also external devices and internal drives.

port

An outlet on the workstation to which you attach cable connectors.

power-on diagnostics

A series of tests that automatically check hardware components of your system each time you turn it on.

power cable

The cable that connects the workstation to a grounded electrical outlet.

power down

To turn off the power switches on the workstation chassis and the monitor.

power supply

The piece of hardware within the Indy chassis that directs power from an electrical outlet to the chassis, the monitor, and internal SCSI devices. It also contains the power switch, reset button, and fan.

power up

To turn on the power switches on the workstation chassis and the monitor.

prompt

A character or word that the system displays in an IRIX shell that indicates the system is ready to accept commands. The default prompt for regular user accounts is %; the default prompt for the root account is #.

quit

To stop running an application.

remote workstation, drive, disk, file system, or printer

A hardware device or the information or media it contains that you can access across the network; they are not physically connected to your workstation.

reset button

A physical button on the workstation that you press to cut off then immediately restore power to the workstation. You should never press this button while IRIX is running, unless all attempts to shut down the system using software fail. See also shut down.

restore (files)

To copy files that once resided on your hard disk from another disk or a tape back onto your hard disk.

root account

The standard IRIX login account reserved for use by the system administrator. This account's home directory is the root (/) directory of the filesystem; the user of the root account has full access to the entire filesystem (that is, can change and delete any file or directory). The user of this account is sometimes referred to as the superuser.

root (/) directory

The directory at the top of the file system hierarchy.

SCSI (Small Computer System Interface)

Pronounced "scuzzy". SCSI is a high speed input/output specification for small computers.

SCSI address

A number from one to seven that uniquely identifies a SCSI device to a system. No two SCSI devices that are physically connected to the same workstation can have the same SCSI address.

SCSI address dial

A small plastic dial connected to every external SCSI device supplied by Silicon Graphics, Inc. You click on its small buttons to select a SCSI address for a new SCSI device.

SCSI bus line

The combined length of all internal and external SCSI cables in a system.

SCSI cable

A cable that connects a SCSI device to a SCSI port on a workstation.

SCSI device

A hardware device that uses the Small Computer System Interface (SCSI) protocol to communicate with the system. Hard disk, floppy disk, floptical disk, CD-ROM, and tape drives are all SCSI devices.

SCSI terminator

A metal cap that you plug into any open SCSI port on a SCSI bus line. No SCSI devices on a SCSI bus line will work unless all SCSI ports are occupied by either a cable or terminator.

screen

The portion of the monitor that displays information.

select

To position the cursor over an icon then click the (left) mouse button. Once an icon is selected, it is the object of whatever operation you select from a menu.

serial device

Any hardware device that requires a serial cable connection to communicate with the workstation.

serial port

An outlet on the workstation to which you connect external serial devices.

server

A system that other systems on the network access to use its disk space, software, or services.

shell

A window into which you type IRIX commands.

shielded cable

A cable with a protective covering which reduces the possibility of interference with radio, television, and other devices.

shut down

To safely close all files, log out, and bring the workstation to a state where you can safely power it down. You choose “System Shutdown” from the System toolchest menu to do this.

SIMM (Single Inline Memory Module)

A small printed circuit board with several chips that contain additional Megabytes of random-access memory (RAM).

SIMM socket

A long, thin, female connector located on the CPU board into which you insert a SIMM.

software option

Any software product that you buy from Silicon Graphics, Inc. other than the standard system software that comes on your system disk.

stand-alone workstation

A workstation that is not connected to a network.

static electricity

Whenever your body comes in physical contact with metal parts (including printed circuit boards) of computer equipment there is the potential for you to feel an electrical shock (electro-static discharge or ESD) which could damage the equipment. To prevent this you must always wear a wrist strap when working with internal parts of a workstation.

subsystem

A portion of a software product. Each product consists of several subsystems; some are required and some are optional.

superuser

An alternate name for the user of the root login account. See also system administrator.

S-video

An increasingly popular analog video signal format that achieves higher picture quality than composite video by passing the luminance (brightness) and chrominance (color) information on separate wires.

system

All the hardware and software that make up the workstation.

system administration

The tasks associated with setting up, maintaining, and troubleshooting a networked or stand-alone Indy system.

system crash

When the IRIX operating system fails and the system will not accept any keyboard or mouse input.

system disk

The physical disk that contains the standard IRIX operating system software - the software that makes your workstation run.

System Manager

A set of tools that the administrator uses to set up and manage the Indy workstation. You access the System Manager through the System toolchest.

system software

The standard IRIX operating system software and Silicon Graphics tools that come on the system disk and on the tape or CD-ROM that you use in the event of a system crash.

System Toolchest

The toolchest in the upper left-hand corner of the screen. You start system tools such as the System Manager and Software Manager using its menu.

TCP/IP

Stands for Transmission Control Protocol/Internet Protocol. A set of networking protocols for Wide Area Networks (WANs). It is also gaining popularity on Local Area Networks (LANs).

Transfer Manager

A tool that you access through the System toolchest that you use to copy files to and from local and remote tapes or disks.

thumbscrew

The ridged knob attached to a screw in a cable connector that you turn to secure the connector to an outlet.

upgrade (hardware)

Hardware that you add to the basic Indy workstation that increases performance, such as additional memory (SIMMs), faster graphics boards, or GIO option boards.

unmount

To make a file system that is accessible from a specific directory on your workstation temporarily unaccessible.

user ID

A number that uniquely identifies a user to the system.

window

A portion of the screen that you can manipulate that contains text or graphics.

workstation

The physical hardware that contains the CPU and graphics boards, a system disk, and a power supply. You connect it to a monitor, keyboard, and mouse to configure a working system. It is also sometimes referred to as the chassis.

wrist strap

A coiled cable with a loop for your wrist at one end and an alligator clip at the other. You fasten the clip to a metal part of the workstation and place the loop around your wrist whenever you work with internal components of the workstation to avoid electrical shocks to yourself and the components. See also static electricity.

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Part Request Form

RMA#
Closed ___/___/___/

Company Name
Street Address
City/State/Zip Code
Contact
Phone
Fax
Purchase Order Number

Call ID #	Model Type	Warranty	System Serial # (as found on back panel)
		Y N	

System Configuration Information:

System S/W Version	Type of failure:	Peripherals:	Voltage:	Disk (MB/GB)	Memory (MB):
_____	☐ Solid ☐ Intermittent	☐ DAT ☐ CD-ROM ☐ Floptical ☐ Other_____	☐ 110 ☐ 220	_____	_____

Problem description (please describe symptoms, error messages and actions taken):

_____

_____

_____

_____

_____ Date _____

Failed part information:

Part Number:	Revision:	Date:
___ – ___ – ___		___/___/___/
___ – ___ – ___		___/___/___/
___ – ___ – ___		___/___/___/
______		___/___/___/
______		___/___/___/
______		___/___/___/

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